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FOR THE

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ON THE

COMMERCE, MANUFACTURES, ETC.,

OF THEIR

CONSULAR DISTRICTS.

FOR THE MONTHS OF

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No. 39.—MARCH, 1884.

PARAGUAY—ITS COMMERCIAL, INDUSTRIAL, AND POLITICAL CONDITION.

REPORT BY CONSUL BAKER, OF BUENOS AYRES.

Our Government has not had for many years, I believe, a representative resident in the Republic of Paraguay, and the present commercial condition of that country is almost a sealed book to the people of the United States. Indeed I have failed to find in the published reports of the Department of State any reference whatever to its commerce or to its industrial and political outlook. In a recent visit to Asuncion my attention was especially called to the lack of information which exists generally in regard to Paraguay, owing in great measure to its isolated position; and it occurred to me that, in accordance with that provision of the consular regulations which requires consuls to "communicate useful or interesting information to the Department," it would not be obtrusively overstepping the boundaries of my own bailiwick to report such facts and figures in regard to its trade, navigation, and industries as I was able while there to procure from reliable sources. To Dr. Don José S. Decond, the present accomplished minister of foreign relations, I am especially indebted for various official documents and publications on the subject, and I have freely availed myself of them in this report.

GEOGRAPHICAL LOCATION.

The Republic of Paraguay is situated in the very heart of South America, in the tropic of Capricorn, 1,000 miles up the Paraná River, and enjoys all the gifts and advantages which nature has so lavishly bestowed upon the tropical regions of South America. Its territory is divided into two great sections—the eastern, which is Paraguay proper, and the western, which embraces the vast region of the Chaco, recently adjudicated to that Republic by President Hayes in the arbitration with the Argentine Republic.

Paraguay proper is bounded on the north by the river Apa, on the east by the Sierras of Amambay and the Paraná River, on the south by the Paraná River, and on the west by the Paraguay River. A glance

at the atlas will show that its location at the junction of the Paraguay with the Paraná River, and locked in between them, a thousand miles from the mouth of the latter, quite corresponds to that of the State of Illinois, whose southern extremity is at the junction of the Ohio with the Mississippi River, and also a thousand miles from its mouth. The limits of Paraguay proper are comprehended between 27° 30′ and 22° south latitude, and between 57° and 61° west longitude. It has a superficial area of about 10,000 square leagues.

The western division is bounded on the north by Bolivia, on the east by the Paraguay River, on the south by the Pilcomayo River, and on the west by the same river and the line which separates it from Bolivia. As yet it is an almost unexplored region, and its superficial area has never been computed.

DISCOVERY, CONQUEST, AND SETTLEMENT.

It is impossible to appreciate the present condition of Paraguay without first being acquainted with its history—in many respects the saddest and most unfortunate of any nation of modern times. Its discovery dates back to 1526, nearly a hundred years before the settlement of New York or Boston. In that year Sebastian Cabot, the great Spanish navigator, to whom North America is also indebted for many of its early explorations, entered the Rio de la Plata; and, after surveying the coast where Buenos Ayres now stands, proceeded up the Paraná River to the Great Falls (Salto Grande), in latitude 27° 27′ S Returning from there, in 1528, to the confluence of the Paraguay, he explored that river and also the Bermijo. Securing a quantity of silver from the Indians, which metal he was given to understand abounded in the country further north, he at once sent the news of his discovery to Spain; and it was thus that the magnificent stream of water which he had explored received the name of "Rio de la Plata," on the false supposition that it washed a country which was rich in silver. In the course of time, however, this name was limited to the great estuary which Solis had previously called "Mar Dulce" (Sweet Sea); and the two great rivers which unite to form it took the names, by which the Indians designated them, of Paraná and Uruguay.

In 1535 Mendoza, the first governor of all the newly discovered territory, was instructed to open an overland communication between the Spanish possessions on the River Plata, and Peru, which had just been conquered from the natives by Pizarro. Captain Ayolas was placed in charge of this expedition and proceeded at once to Paraguay. After several encounters with the Indians, on the 15th of August, 1536, he captured their intrenched town of Lambare and obliged them to sue for peace. Here he built a fort, which was the beginning of the present city of Asuncion, nearly fifty years before the foundation of Buenos Ayres. It appears that in fulfillment of the articles of peace, the Indians delivered seven women for Ayolas and two for each soldier; and this was the beginning of the mixed race which now predominates in Paraguay. In 1554 Irala completed the conquest of the country; and among other laws, which still further assisted in corrupting the pure blood of the Spaniards, he established a special system for subjugating the aborigines; by virtue of which, upon application, any Spaniard could, at his own cost, undertake the reduction of a tribe and possess it under the title of a military commissioner. Where the reduction required force, the Indians, females as well as males, were divided among the soldiers, and were obliged to render service to their owners, sometimes or a certain number of years and sometimes for life.

THE JESUITS IN PARAGUAY.

The abuses under this iniquitous system became so atrocious, that in 1605 Governor Saavedra proposed to the home government the humane idea of reclaiming the natives by pacific means; and Philip III, approving the idea, sent out a number of priests of the Order of Jesus, who began their apostolic work in 1609, and established in Paraguay the famous *missiones*, which for so many years after its separation from Buenos Ayres, in 1620, virtually controlled that country. Through the influence of their schools and the mild policy they pursued, they succeeded not only in obtaining a wonderful ascendency over the minds of the natives, but in teaching them agriculture, architecture, and many of the other arts of civilized life. The magnificent orange groves which are now found throughout Paraguay were first planted by them. The remains of the churches and other edifices in the interior of the country are still monuments of the skill they acquired as artisans, but more than this, the language of the Guarani Indians was, under the labors of the Jesuit missionaries, reduced to a written idiom, which was taught in the schools; and, outside of Asuncion, is still almost exclusively the language of the Paraguayan people.* The numerous villages (*reducciones*) which they established all through the interior were models of thrift, neatness, and prosperity. But not content with thus assisting in the physical development of the country, they offended the rulers by also undertaking, as was charged, to control its politics. At least, in 1766, it was represented to the Spanish King (Charles III) that they were attempting to found an independent government in Paraguay; and by an edict from the Spanish Crown, the entire order of Jesuits, after having had possession of the country for a little more than one hundred and fifty years, were forcibly expelled, not only from Paraguay, but also from the rest of its South American colonies. After their ejection from the country, the *misiones* were handed over by the Government to the rapacity of covetous adventurers; and history tells us that in less than a year nothing remained of these prosperous settlements but their ruins. The Indians and mixed breeds, having been so long dependent upon the prudence, forethought, and administrative ability of their spiritual protectors, had lost all idea of thinking for or taking care of themselves, and they at once relapsed into a condition of apathy, unthrift, and indolence, which to this day, in great part, characterizes the descendants of the Guaranis.

The subsequent colonial history of Paraguay is little more than a succession of political disorders and revolutions. During all these years the pricipal industry of the people was the gathering of Paraguayan tea (*yerbo moté*) and the cultivation of mandioca and tobacco, nature supplying everything else necessary to life in the most bountiful manner. Under the policy pursued by the Spanish Crown, no vessels from Paraguay were allowed to trade with Buenos Ayres; and the result was that it had no commerce whatever, except with the small port of Santa Fé, where its products, after paying heavy duties and high freights, were distributed to the other interior provinces. This want of contact with the outside world to which Paraguay was condemned, the tyranny of the landed proprietors, the political commotions which periodically oc-

NOTE.—*On a recent visit to the University of Cordoba I saw, among the books in the library, a grammar of the Guarari language, and a heroic poem, running through many cantos, written in hexameter verse.

curred, the enervating influence of the climate, and the indolence of the people, all conspired to retard the growth of that country.*

SEPARATION FROM SPAIN AND THE DESPOTISM WHICH ENSUED.

When, however, in 1811, commenced the uprisings in all the Spanish colonies against the mother country, the zeal in the cause of civil liberty manifested by the Paraguayan people was fully equal to that in the other provinces; and they were not slow, owing to their isolated situation, in throwing off the Spanish yoke. Instead of uniting its destinies to those of the Argentine Republic, Paraguay asserted its own individuality and proceeded to establish an independent government. But its dream of political freedom lasted only for a moment. Its subsequent misfortunes have no parallel in history. Caspar Francia was elected president in 1817 under the most promising auspices, the simple-minded people not hesitating to yield to him the same obedience and fidelity that they had done before to the Jesuit priests; but he had no sooner assumed the reins of power than he established a dictatorship and instituted a system of tyranny and espionage of the most oppressive and cruel character. He not only prohibited all access to the country by land or water, but he constituted himself its sole authorized exporter and importer. Foreigners were especially excluded from entering, while he detained forcibly all who happened to be in the country, not only throwing them into prison on the most frivolous pretexts, but leaving them there to linger out a miserable existence. During the quarter of a century that he controlled the destinies of Paraguay, the country was a closed book to the rest of the world. He discouraged all commercial pursuits; he stopped the progress of agriculture; confiscated the estates of all who displeased him; annulled the laws of marriage; suppressed religion, and ruled with such a relentless despotism that his very name was a terror to the people.

Upon the death of Francia in 1840, another adventurer, named Carlos Antonio Lopez, succeeded in getting possession of the Government. He did not indulge in the judicial murders which had decimated all the best families under the rule of his bloodthirsty predecessor, yet he assumed and persistently exercised the most despotic powers, plundering the people in the most unscrupulous manner, and enriching himself and his family at the expense of the public treasury. Under jealous restrictions, however, he was finally induced to open the country to foreign trade, and even offered inducements for the investment of foreign capital. The people, once more left to enjoy the fruits of their own industry, rapidly recovered from their former depression. The fertile valleys and magnificent uplands again began to be dotted with farms and *estancias;* and at last it seemed that Paraguay was to take a fresh start in its material progress. But the elder Lopez died in 1862, and was succeeded by his son, Francisco Solano Lopez, who proved to be the most ignorant, conceited, cruel, and revengeful tyrant among all the terrible list that have written their names in blood upon the South American continent. He was not long in involving his country in a senseless war, by committing the most high-handed reprisals upon Brazil, Uruguay, and the Argentine Republic; and in the short space of seven years Paraguay, under the desolating effects of his foreign policy, was reduced to the mere wreck of a nation. Out of a population of 1,200,000 only 300,000 remained, and these were principally women and children, hid-

* This sketch is compiled and translated from Dominguez's History of the Argentine Republic.

ing in the woods and marshes, without food or clothing. When the miserable wretch was finally bayoneted in a ditch by his pursuing enemies, and peace was once more restored to the country, it was the peace of desolation. Asuncion, the capital, was in ruins; the villages were deserted; the herds and flocks had disappeared; agriculture was without laborers; the revenues of the nation were insufficient to defray the expense of maintaining even the semblance of law and order; and, what was worse, the Empire of Brazil proceeded to assume a forced protectorate over the prostrate country, garrisoning all its forts, and stationing an army of brutal soldiers among the remnant of its brave and devoted people.

REORGANIZATION AND PRESENT POLITICAL CONDITION.

It is now fourteen years since the close of that unfortunate war, and it will probably be as many more before Paraguay fully recovers from its effects. Its prostration was so utter and so complete that its restoration must be the work of time. Under the auspices, however, of the present rulers, who have caught something of the progressive spirit of the age, and who are doing all they can to assist in re-establishing the commerce and reorganizing the industries of the country, hope seems once more to have dawned upon the nation, and there is at last a prospect of better times in store for the people of that beautiful country, for which nature has done so much and man has done so little.

One of the first concerns of those who found themselves in charge of the wreck of the Government was its political reorganization on a basis which would render next to impossible a repetition of the enormous abuses of power which had so despotically and so disastrously characterized the careers of their predecessors. On the 24th of November, 1870, a convention proclaimed a new organic law for the Republic,* giving the people full and complete representation in all the affairs of the nation. Modeled after that of the United States, the Government is apportioned to three different departments—the executive, the legislative, and the judicial. The executive power is administered by a president, and in case of necessity the vice-president succeeds to the presidency; but their terms of office only continue for four years, and in no case can either of them be re-elected except after an interval of two terms. Each district selects its own presidential electors, being in number four times that of the deputies and Senators together. The legislative department is divided into two Chambers—the senators and deputies. The latter are elected directly by the people, one deputy being apportioned to each six thousand inhabitants, and their term of office is four years, one-half being elected every two years. The senators are selected in the same way, one being apportioned to every twelve thousand inhabitants, and their term of office is for six years. The supreme court, composed of three judges, and other courts of inferior jurisdiction, constitute the judicial department. The Roman Catholic is the established religion, though the free exercise of other forms of worship is fully guaranteed by the eighth article of the constitution.

The country is divided into twenty-three counties (*partidos*) which are governed by chiefs (*gefes politicos*) and justices of the peace, assisted by a board of commissioners (*juntas económico administrativas*).

The salaries of all officials are fixed by law and all appropriations

* I have been told that the official copy of the first constitution of Paraguay was lost during long reign of terror and has never been found.

must be voted by Congress. The salary of the president is $500 per month; that of the vice-president $250; members of the cabinet, $150; senators and deputies in congress get $500 per annum, and the judges of the supreme court $150 each.

POPULATION, PAST AND PRESENT, OF THE COUNTRY.

A census taken by the Government in 1876 showed a total population of only 293,844 souls. It was reported in 1857 to be 1,337,439; so that the total losses from all causes during the Paraguayan war were over a million of men—losses which, considering the circumstances, are perhaps unparalleled in the history of modern wars, and which prove the valor and desperation with which the overmatched Paraguayans fought to the death. As more significantly showing the losses by the war, I would add that in 1857 Asuncion had a population of 40,000 souls; in 1876 it had only 16,000. Before the war the district of Villa Rica contained 109,776 inhabitants; in 1876 it only contained 11,779. Before the war the district of Pilar had 160,411 inhabitants; in 1876 it had only 10,969. And so on through the whole list of *partidos*.*

It is estimated that the present population of Paraguay is about 350,000 souls; and, as a sad commentary on the condition of the country, I am further informed that the proportion of females to males is about 9 to 1; in other words, there are 315,000 women to only 35,000 men. It is hardly necessary to say that almost the entire work of the country is performed by females. They are "hewers of wood and drawers of water." They are the agriculturists, the producers, the traffickers, and the common laborers of the nation—active, industrious, indefatigable, thrifty; toiling early and late; some of them daily tramping to market barefooted, through the burning sands and the sweltering heat, with their stock in trade upon their heads, consisting of all manner of country produce and merchandise, being in many cases burdens sufficient to weight down a horse, an animal, by the way, which very few of them are wealthy enough to possess. And while this is going on the Paraguayan men, who on account of their scarcity are at a premium, sit idly by smoking their cigarettes and drinking caña (the whisky of the country); and when the return of sales is rendered they pocket the proceeds. Of course, this criticism is only intended to apply to the mixed Guarain race of men who never work if their women will work for them.†

GENERAL APPEARANCE OF THE COUNTRY.

The general appearance of Paraguay is far more attractive than either Uruguay or the Argentine Republic. The right bank of the river Paraguay presents an uninterrupted fringe of dense forests, which stretch across to the eastern boundaries of the country, and embrace a hundred different varieties of timber trees. On the opposite shore, skirting the Chaco, are open meadows of immeasurable extent, widening out among groves of palm and cocoa trees. In the extreme southern limits of Paraguay, the mesopotamia is an alternation of low prairies and vast lagunas, covered with a rank vegetation, and swamps, which extend to the northward for a considerable distance. Among the latter is the famous Estero Bellaco, the Carubá, the Ipicua, and the Aquaracati. Of the lakes, the most important are the Neembucú, the Ipoa,

* *El Paraguay, Industrial y Comercial, por B. T. Martinez*, 1882.

† While I was in Paraguay a law was passed which provided that every able-bodied man who had no visible occupation and refused to work should be sent to the penal colony, on the Chaco side, as a vagrant, and there be required to labor.

and the Ipacarai, about which the natives are fond of telling some strange legends. The country is almost bisected by a range of mountains, running north and south, which in the north is called the cordillera of Amambay and in the south is designated by the name of Caäguazú. The latter, on crossing the Paraná River, produces the famous falls of La Guayra. From this principal chain there are many lateral spurs or smaller mountains, with intervening water-courses, all of which tend to give a most pleasing variety to the natural scenery, and a healthful virtue to the climate.

TEMPERATURE AND RAINFALL.

Indeed the climate of Paraguay, although warm in summer, is generally regarded as exceedingly salubrious. During the winter season there are occasional slight frosts, which sometimes nip the coffee plants, but the general conditions of the temperature are subtropical. From meteorological observations taken during the years 1877, 1878, 1879, and 1880, by a German scientist named Enrique Mageles, it appears that the mean temperature of Asuncion during the six summer months of those years (the year is divided into only two seasons), that is to say during the months of October, November, December, January, February, and March, was as follows: The mean temperature of the six summer months in 1877 was 82.62° Fahr.; in 1878, 80.13°; in 1879, 80.89°; in 1880, 79.70°.

The mean temperature during the winter season of the same years, *i. e.*, from April to September, inclusive, gave the following results: The temperature of the six winter months in 1877 was 71.82° Fahr.; in 1878, 70.36°; in 1879, 71.35°; in 1880, 70.20°.

As the mean temperature of the summer months during the four years was 80.82°, and that of the winter months during the same time was 71.10°, the mean difference between the two seasons was only 9.72°. The hottest month of summer (1880) was January, when the mean temperature was 83.79°, and the coolest month was September, when the mean temperature was 67.85°. The hottest day in 1880 was the 24th of January, when the maximum temperature reached 97.25°, and the coldest day of that year was the 29th day of June, when the mercury fell to 45.50°. In 1879, however, the hottest day showed a maximum temperature of 119.75°, and the coldest day showed a minimum of 31°.

It will be borne in mind that these observations were made in Asuncion, and that in the interior there is occasionally not only hotter but also colder weather. I find from the weather statistics of the four years referred to that there were twelve frosts in 1877, sixteen in 1878, nine in 1879, and three in 1880.

The quantity of rain that falls in Paraguay varies with the season, and also in different years. The amount of rainfall in 1880, was as follows:

	Millimeters.	
SUMMER.		
From October to December, inclusive	407	
From January to March, inclusive	577	
		984
WINTER.		
From April to June, inclusive	304	
From July to September, inclusive	289	
		590
Total for the year 1880 in millimeters		1,574

or a little over 5 feet of water. The rainfall in 1879 was 1,584 millimeters, or 5.2 feet; in 1878 it was 1,812 millimeters, or 5.9 feet; while in

1877, the enormous quantity of 2,613 millimeters was recorded, equal to nearly 9 feet of water. These last figures seem almost incredible, but persons who were living in Paraguay at that time assure me of the extraordinary rains which occurred during the summer throughout the country. It is probably this constant humidity of the air which, in spite of the heat of summer, makes Paraguay so generally healthful. There are few diseases among the people except those of a malarial character.

MINERALS.

The mineral resources of Paraguay have never been developed, and but little is yet scientifically known in regard to their extent. It is well known, however, that iron, copper, manganese, gold, marble, building-stone, granite, &c., exist throughout the country. In regard to gold, it is difficult to understand the conditions which surround the ore. A company a few years ago was organized to work the mines of Amambay, but for some reason, which I have never learned, nothing whatever was done, and the stories told of their richness are probably in great part apocryphal.

ARBORESCENCE AND VEGETABLE PRODUCTIONS.

But what Paraguay lacks in the precious metals is abundantly made up in the wealth of its vegetable productions. Its forests of exquisite woods of construction were fully represented in the Paris Expositions of 1855 and 1878; in the Philadelphia Exposition of 1876, and in the Buenos Ayres Exposition of 1880, sectional cuttings of more than a hundred different varieties of trees and plants being on exhibition in the latter. I have already, in a report to the Department, referred to the wonderful variety which exists in the timber resources of Paraguay, and in the absence of scientific names it is hardly necessary to repeat the vulgar or common names by which the trees are designated by the people of the country. Señor Antonio G. Blanco, however, has made a technic analysis of the vegetable productions of the country, from which it appears that there are in Paraguay seventy distinct varieties of trees which are suitable for building purposes and other constructions; thirty-eight varieties which bear fruits useful for food; four varieties which are useful for tanning purposes; fifteen varieties with coloring properties; sixty-nine varieties with known medicinal properties; eight varieties which produce material that can be woven, and forty-three varieties that afford industrial products.

The agricultural productions of the country include cotton, rice, coffee, beans, potatoes, sweet potatoes, corn, mandioca, pea-nuts, pease, barley, sugar-cane, plaintains, oranges, turnips, radishes, bananas, tobacco, &c.; the country is also rich in bees, cochineal, silk-worms, &c. But little attention is yet paid to these industries.

AGRICULTURE.

Considering the impediments which bad rulers and civil and external wars have upon the development of the agriculture of a country, it is not astonishing that Paraguay should show so little progress in this fundamental industry. Tobacco is one of the most valuable crops which the country now produces. In 1829 its production amounted to only 2,675,000 pounds; in 1860 the crop amounted to 15,000,000 pounds; but the war with the allies almost ruined this source of wealth. It has

since somewhat recovered its importance, the exports alone last year amounting to 8,975,000 pounds. A large proportion of the crop, however, is annually worked up into cigars, a branch of industry which is almost entirely in the hands of the women. The tobacco planted in Paraguay originally came from Havana, with the exception of a kind which the people call blue tobacco (*peti-hoby*), the origin of which is unknown. The favoriteleaf, however, is a yellow tobacco (*peti-pará*), raised in Villa Rica, which possesses about 6 per cent. of nicotine.

Sugar-cane is another of the important agricultural products of the country—a plantation of which when once well set lasting without any care or necessity of replanting for ten or twelve years. One acre of the cane will average about two hundred and fifty gallons of molasses. There are three different kinds of cane under cultivation, though I am not prepared to explain the difference between them.

Rice also produces abundantly, yielding three hundred-fold. Equal results are obtained from the Indian corn crop. Coffee does well and is regarded by some as the crop of the future. But the crop most esteemed by the Paraguayans is that of mandioca, it being with them an article of prime necessity, taking the place of wheat flour in the family household, the tuber being also used for a vegetable.

The quantity of land now under cultivation is very small compared with the amount before the war with the allies, the great scarcity of laborers in the country very seriously retarding the development of the agricultural interests. The following figures show the number of acres devoted to the different crops:

	Acres.
Corn, wheat, and barley	210,000
Mandioca	125,700
Tobacco	41,500
Sugar cane	23,450
Cotton and other products	50,000
Total number of acres in cultivation	450,650

The cotton plant grows spontaneously and takes a wonderful development, lasting ten or twelve years.

The orange groves of Paraguay are scattered indiscriminately over the country, the plantations attaining to an immense growth. Indeed, the forests are everywhere full of these beautiful trees from the casual dropping of the seed; and, though originally introduced by the Jesuit fathers, the fruit has come to be not only an almost indispensable article of food, but its annual export reaches to upwards of ten millions of oranges, mostly shipped to Buenos Ayres and Montevideo.

PARAGUAYAN TEA.

Paraguayan tea (*yerba maté*) is, perhaps, the most important production of the country. In former years its preparation for market and exportation yielded the greater portion of the national revenue. In 1861 the total amount exported was upwards of 4,000,000 pounds, whose official value was $1,899,000. In 1862 the total amount exported was about 12,000,000 pounds, whose official value was $2,700,000. In 1880 the total amount exported was about 11,375,000 pounds, though the official value only amounted to $910,000. This *yerba maté* consists of the dried leaves of a species of holly tree (*Ilex paraguayensis*) indigenous to the country, which grows without cultivation, attaining to a height of about twenty feet, and is found throughout Paraguay and the adjacent Brazilian provinces. The zone of its production is greater than that of France and

Germany together. It takes the place of both tea and coffee among a large proportion of the people of the Argentine Republic, Uruguay, Chile, Peru, Bolivia, and the three southern provinces of Brazil. In Paraguay it is almost exclusively used by the people of the country. In Europe and the United States, I believe, it is yet only used pharmaceutically. As I recently made a special report to the Department on the subject of this Paraguayan tea, in which I fully explained the manner of its preparation and use, it is not necessary for me to go into further details at this time.* I will only add that its use, instead of decreasing, is becoming more general, and the amount consumed is annually increasing.

NAVIGATION OF THE PARARNÁ AND PARAGUAY RIVERS.

The geographical position of Paraguay north of the Argentine Republic and west of Brazil leaves it without maritime ports. The Paraná and Paraguay Rivers, however, afford a convenient outlet to the Atlantic sea-board; and with the development of the agricultural and other industries of that country they will float a much greater commerce than they do at present. The distance traversed by those rivers quite corresponds to that of some of our own great water-courses. The Paraguay River has its source in seven lakes, in latitude 13° 30′ S. and longitude 59° 2′ W., in the empire of Brazil, the "divide" on which they are situated turning the waters on one side towards the river Amazon and on the other to the Paraguay. The length of the Paraguay River to its junction with the Paraná is 1,800 miles, while that of the latter river is 1,100, so that the entire distance which those two streams together traverse is nearly 3,000 miles. Among the smaller rivers which have their rise in the territory of Parguay, some of which are navigable, may be mentioned the river Apa, which is its boundary with Brazil, and the Aquidibán, the Ipané, the Jejui, the Manduvira, the Salado, and the Tebicuaré. On the Chaco side the principal affluents are the Bermijo and the Pilcomayo, which latter has its source in Bolivia, and after a course of 1,500 miles empties into the Paraguay just below Asuncion. This river is navigable for small steamers for many hundreds of miles, and many attempts have been made to utilize it as a vehicle for the commerce to and from Bolivia; but, between sand-bars, snags, and hostile Indians, nothing has yet been satisfactorily accomplished.

On the eastern side of Paraguay is the continuation of the Paraná River, which has its rise in Brazil, in latitude 16° 30′ S., near the town of Goyaz, where it is known under the name of Curumbá. The entire extent of the Paraná River is bout 2,250 miles.

During the dictatorship of Francià, the tyrant of Paraguay, the commercial development of that country was impossible, all the ports on both rivers being entirely closed to all outside communication; and the export of Paraguayan produce was interdicted under the penalty of death. Upon his death his successor, Carlos A. Lopez, undertook, by decree, to open the ports to the trade of the world, but he was met by the opposition of Rosas, the corresponding dictator and tyrant of the river Plate, who utterly opposed the opening of the Paraná River to a free commerce. With the victory of Caseros, however, achieved by General Urquiza over Rosas, the Paraná and all the other rivers of the country were thrown open to the navigation of the world, the United States, by special treaty both with the Argentine Republic and Paraguay, having all the privileges of the "most favored nation" in the participation of their commerce.

*See Consular Reports No. 28, for February, 1883.

There is usually a sufficient depth of water between Asuncion and Buenos Ayres for the largest class of river steamers, though during the summer season the bars on the Paraná are a little difficult for vessels drawing more than 10 feet. Besides the fleet of small craft that navigate the upper rivers, there are two well-established lines of steamers—one under the Argentine flag, whose principal office is in Buenos Ayres, and the other under the Brazilian flag, which extends its trips as far up the Paraguay River as Cuyabá. Both lines have commodious vessels and excellent accommodations for passengers. The first-named line sends a steamer from Buenos Ayres twice a week, and the other from Montevideo, touching at Buenos Ayres, once a month. There is a line of small steamers running on the Upper Paraná from Corrientes to the foot of the falls.

ARRIVALS AND DEPARTURES OF STEAMERS.

I have not been able to obtain an official statement from the Paraguayan authorities of the navigation of that country, but as all vessels to and from Paraguayan ports are of necessity compelled to touch also at Argentine ports, I have procured from the custom-house officials of the latter country a statement of all arrivals and departures of vessels from or for the ports of Paraguay for the year 1882, as follows:

	Arrivals from Paraguay.		Departures for Paraguay.	
Kind of vessel.	Number.	Tonnage.	Number.	Tonnage.
Sailing vessels	170	4,369	86	6,598
Steamers	452	100,450	483	123,500
Total	696	104,819	569	130,198

Of the above only two steamers and one hundred and twenty sailing vessels were under the Paraguayan flag.

COMMERCE OF PARAGUAY.

From custom-house returns it appears that the total value of the foreign commerce of Paraguay for the year 1881 was $3,221,491, the imports being $1,292,943 and the exports $1,928,548. The following table shows the total commerce compared with that of the three previous years:

COMMERCE BEFORE THE WAR.

As showing the course of the foreign commerce of the Republic of Paraguay during the series of years preceding the war with the allies, the following table may not be without some interest:

Year.	Imports.	Exports.	Total.
1851	$230,917	$341,616	$572,533
1852	715,886	470,010	1,185,896
1853	406,688	690,480	1,097,168
1854	595,823	777,861	1,373,684
1855	431,835	1,005,900	1,437,735
1856	631,234	1,143,131	1,774,365
1857	1,074,639	1,700,722	2,775,361
1858	866,596	1,205,819	2,072,415
1859	1,539,648	2,199,678	3,739,326
1860	885,841	1,693,904	2,579,745

It will be observed that the foreign commerce of Paraguay is only now just recovering the proportions which it had reached twenty years ago.

TRADE WITH THE ARGENTINE REPUBLIC.

Owing to the fact that the country is without any direct maritime commerce, its imports and exports almost entirely pass through the custom-houses of the Argentine Republic. Indeed, so far as its exports are concerned, the latter country is the real market for its products, while a very large proportion of its purchases are also made there. The following table will show its direct trade with the Argentine Republic for the years named:

Direct trade of Paraguay with the Argentine Republic.

Year.	Imports.	Exports.	Total.
1876	$713,190	$231,943	$945,133
1877	648,054	517,619	1,165,676
1878	571,725	375,707	947,432
1879	724,236	464,192	1,188,428
1880	802,805	46,321	849,126
1881	967,441	323,621	1,291,062
1882	1,104,347	70,341	1,174,688

Besides this direct trade, there is also a transit trade with the Argentine Republic which every year is becoming more considerable. The amount of this transit trade in 1881 amounted to $400,453, of which $20,072 was the value of merchandise which passed through the Argentine Republic to Paraguay, and $380,381 was the value of merchandise which passed through the Argentine Republic from Paraguay to foreign ports. The amount of this trade in 1882 was $643,790, of which $55,131 went to Paraguay and $588,660 went from Paraguay through the Argentine Republic to other markets.

I have no means of determining to what countries the transit imports to Paraguay should be credited, though I think mostly to France and Great Britain; certainly, except a few thousand feet of lumber, but little of it came from the United States.

Exports from Paraguay for 1881.

Articles.	Quantity.	Value.
Yerba ..... arrobas*	495,876	$996,752 00
Hides, ox and cow ..... number	37,317	130,609 50
Tobacco ..... arrobas	336,033	672,066 00
Cigars ..... number	20,009,597	24,669 52
Preserves and dulces ..... arrobas	3,249	4,548 60
Essences ..... kilos	1,467	4,401 00
Woods ..... square yards	33,424	16,712 00
Oranges ..... almudas†	479,177	47,917 70
Bark of the curapai tree ..... arrobas	22,495	2,811 87
Palm trees ..... number	5,130	2,052 00
Various timber ..... yards	11,057	2,534 40
Beans ..... arrobas	2,792	1,641 00
Hides, tanned ..... number	200	1,400 00
Caña or Paraguayan whisky ..... gallons	2,769	1,384 50
Cocoanut oil ..... arrobas	586	1,172 00
Ostrich feathers ..... do	14	1,160 00
Hide cuttings, &c ..... do	978	978 00
Sleepers and joists ..... number	1,358	1,358 00
Jaborandi ..... arrobas	803	803 00
Hoops ..... number	19,480	779 20
Liquors ..... demijohns	387	774 00

Exports from Paraguay for 1881—Continued.

Articles.		Quantity.	Value.
e	arrobas..	1,321	$669 50
slons	number..	6,200	620 00
	arrobas..	44	616 00
ho wood	tons..	200	600 00
	number..	2,474	494 80
	arrobas..	424	424 00
as	number..	367	367 00
ne	bundles..	1,783	356 60
	arrobas..	170	340 00
peel	do....	167	334 00
	pairs..	12	360 00
orn	boxes..	509	254 50
	arrobas..	622	186 60
	tons..	618	185 40
	arrobas..	147	147 00
	do....	46	126 50
	number..	299	119 60
	arrobas..	37	111 00
	do....	160	96 00
f the amarubay	number..	450	90 00
nmocks	do....	14	70 00
	arrobas..	54	54 00
	do....	52	52 00
lants	bundles..	102	51 00
a, dried	arrobas..	218	43 60
ware of the country	dozens..	189	37 80
	arrobas..	16	32 00
	do....	6	30 00
	do....	5	25 00
of the country	number..	142	21 30
he jaborandi	arrobas..	19	19 00
o skins	number..	31	18 60
Mandioca bread	arrobas..	18	18 00
	pounds..	87	17 40
ls	arrobas..	86	17 20
	dozens..	8	16 00
ons	do....	16	16 00
illa	arrobas..	3	15 00
	do....	6	12 00
	baskets..	27	10 80
a	arrobas..	5	10 00
iners	dozens..	9	9 00
mountain cats	number..	8	8 00
	dozens..	100	10 00
s	number..	50	10 00
	arrobas..	5	5 00
	dozens..	86	8 60
birds	arrobas..	1	5 00
	cages..	3	6 00
	bags..	11	5 50
nes	number..	5	2 50
	arrobas..	2	2 00
	do....	4	2 40
a	do....	15	1 50
skins	number..	9	1 80
les	baskets..		60
	arrobas..	5,397	3,781 40
tal official value			1,928,548 80

*An arroba is 25 pounds. † Almuda is about 6 bushels.

lance at the foregoing table will show that the principal exports
country consist almost exclusively of yerbá, tobacco, hides, or-
, and timber, with an almost innumerable array of small items,
of them of no significance except on account of their oddity.

Imports and exports for four years.

Year.	Imports.	Exports.	Total.
	$956,144	1,582,342	$2,538,486
	1,030,408	1,163,417	2,193,825
	1,292,943	1,928,548	3,221,491
	1,320,152	1,650,679	2,970,831

The minister of the treasury states that the apparent diminution in the commerce of 1882 compared with the previous year is only apparent, since there has been a reduction of the official values of articles passing through the custom-houses.

REVENUE AND EXPENDITURES.

The revenues of the Republic of Paraguay, which, at the close of the war with the allies, and for several years after, were not sufficient to meet the ordinary demands of the Government, have of late shown a decided improvement. This has especially been the case since the present able minister of finance, Señor Juan de la C. Jimenez, took charge of that department. The revenues are principally derived from duties levied on imports and exports, warehousing, taxes, stamped paper, licenses, the sale of public lands, &c. The principal source, however, is that of the custom-house duties. These for the last two years were as follows:

Source.	1881.	1882.
Duties from imports	$342,913	$388,544
Duties from exports	84,027	80,435
Warehousing, &c	15,838	8,642
Total	441,778	477,621

The amounts received from the sale of stamped paper in 1882 was $15,528; from licenses, $9,174; from the post-office department, $2,516; from the sale of the public lands, $6,621; for taxes, $266,476; for sundries, $31,569. Total receipts of the treasury from all sources, $819,503.

I have not before me the amount of appropriations for the last year, but the ordinary expenses of the different departments of the Government for the previous year, not, however, including the service of the public debt, were as follows:

Department of the interior, including expenses of Congress	$103,361
Department of foreign relations	9,720
Department of the treasury	36,660
Department of justice, worship, and education	71,748
Department of war and marine	47,345
Total	268,834

It appears that on the 31st of December, 1881, there was a cash balance to the credit of the Government of $89,254; and on the 31st of December, 1882, of $144,621, from which it would seem that the public treasury was in a prosperous condition.

FINANCIAL CONDITION.

The financial outlook of Paraguay, however, is not at present as satisfactory as those in charge of the Government would wish to make it. And this is owing to the incubus of a large foreign debt, which, in some mysterious way, was incurred just after the close of the late war. The total amount of the two loans, which were contracted in England in 1871 and 1872, was for about $7,000,000. Its ostensible object was for the construction of railways and other public works, but what became of the proceeds is a conundrum which nobody seems prepared to answer. It is generally stated in Paraguay that the total sum which ever reached

the treasury of the nation was about $150,000, and those who conducted the negotiation, I suppose, pocketed the balance for their services.

To be added to this amount is the sum of $8,960,183, with interest at the rate of 6 per cent. per annum, being the amount of the award fixed by the mixed commission for losses and injuries sustained by Brazilian subjects during the war.

An Argentine commission, with a similar object in view, were recently in session in Asuncion for the purpose of determining the amount of the claims and damages resulting from the war to citizens of the Argentine Republic. I have yet seen no statement of the amount awarded.

I have before me the report of Señor Juan A. Jara, late minister of the treasury, for the year 1882, and the statement he makes of the foreign debt of Paraguay is as follows:

Amount of Brazilian claims	$8,960,183 03
Liquidated interest on the same	916,283 21
First London loan	4,704,000 00
Second London loan	2,163,756 00
Loan from the Argentine National Bank	42,589 60
Total foreign debt	16,786,811 84

The loan from the national bank of the Argentine Republic was for a special purpose, and of course it will be duly accommodated; but in regard to the other amounts, the Government of Paraguay is of course without resources at present, even to meet the accruing interest, in the payment of which it long since made default.

Besides this foreign indebtedness, for several years past Paraguay has also had a small floating or home debt, which, in 1881, amounted to $642,667.19; but since then it has been so reduced in amount that now it is a mere bagatelle, only reaching to $171,493.71.

PROSPECTS OF THE FOREIGN DEBT.

In regard to the foreign debt, Señor Jara, late finance minister, in his report of the date of July 23, 1882, makes the following statement:

> I have nothing new to say in regard to the foreign debt. It continues exactly in the same condition as heretofore, without our having been able to do anything towards placing it on a better footing. Subsequent to the arrangement which was entered into between the Government of Paraguay and the committee of the London bondholders, and which failed through a want of compliance with its stipulations on the part of the latter parties, nothing has been formally done with a view to a resumption of negotiations with reference to the English debt. The Government awaits fresh overtures on the part of the committee in order to see if some definite arrangement of the debt on terms mutually satisfactory and practicable may not be effected.
>
> In reference to the obligations (*policias*) issued as an indemnification of the losses and injuries which private parties sustained during the war against the allies, I am only able to repeat what I had the honor to say in my last report, to wit, that we are not able to attend to its service for the public and notorious fact that the elements to that end are absolutely wanting, and that it is not easy to arrive at any accommodation with reference to it which would be followed by any practical results.

The minister is correct. It is impossible for Paraguay to meet those claims. In my opinion, however, it is not expected by Brazil that the amount awarded will ever be paid in terms; but it is held in reserve, in order to meet any political complications which may hereafter transpire, by reason of which that empire, which has for many years looked on Paraguay with longing and avaricious eyes, may have a pretext for annexation or forcible possession. And it is evidently to counteract this Brazilian scheme that the Argentine Republic has lately seen the propriety of also adjusting and definitely fixing the amount of indem-

nification for which Paraguay is likewise responsible to citizens of the Argentine Republic in the way of losses and injuries sustained by the war. Thus the latter nation, though it may never expect to receive a cent in payment, will yet have an equal interest with Brazil in the future destiny of Paraguay, and will consent to no encroachments on the latter Republic, which may have a tendency to destroy the integrity of its territory or of its Government.

EFFORTS TO PROMOTE IMMIGRATION.

Meanwhile there is no better gauge of the high hopes which those at present in charge of the Government of Paraguay have of its development and destiny than the earnest efforts they are making to promote immigration and induce the investment of foreign capital. Immediately after the award to Paraguay of Villa Occidental and the adjacent Chaco by President Hayes that settlement was formed into an agricultural colony under the new name of Villa Hayes, an appropriation of $40,000 having been made to further the end in view; and I understand the success which has thus far attended the project is in every respect satisfactory. Dr. Decond, the present minister of foreign affairs, a gentleman of extensive travel through the United States and Europe, and a statesman of far-seeing views, has made himself especially conspicuous by his writings looking to the material progress of his country; while the president of the Republic, General D. Bernadino Caballero, fully in accord with his advanced views, has sought to make them practical. In his last message to the Paraguayan congress he says:

> Under the auspices of peace, the Government has been able to consider carefully the solution of various problems of high importance to the country, and one of my first duties will be to submit for your approbation a general project for the encouragement of colonization. I need not demonstrate the necessity of this measure. Since the late war our population has remained very reduced, with a most notable disproportion between the sexes. On this account the natural increase of our population must of necessity be slow, as likewise also the development of the resources of the country. We must then seek to increase our population by artificial means—by conceding to those come to establish themselves among us liberally of our public lands and a participation in the same advantages that our neighboring countries offer.

The project thus submitted was the organization of a department of immigration under the control of the minister of the interior, and it was at once sanctioned by the Paraguayan congress. It is not necessary to give the provisions of the law in full, but they seem to be of a liberal character. The minister is authorized to establish colonies for agricultural purposes on such public lands as he may select, preference being had to those on navigable rivers and railway lines, or in the direction of their projected prolongation; the lands to be subdivided into lots of sixteen and eight square *cuadras* each, equal to about eighty and forty acres each; and such families as are willing to immigrate to the country on the conditions specified in the law shall be entitled to receive from the Government (1) the expense of their passage from the port of embarkation to their destination; (2) maintenance at the public expense for six months, to be extended to another six months under extraordinary circumstances; as also a habitation, agricultural implements, seeds, and animals for service; (3) a lot of eighty acres (*diez y seis cuadras cuadradas*), the title to which will be secured after having cultivated it for five successive years. Besides this, each colonist has the right to acquire from one to four additional lots at the price of $2 for each *cuadra*, payable in ten annual installments. It would seem that the terms are so reasonable that the populations of over-crowded

Europe would gladly take advantage of them in the hope of improving their material condition.

LAW FOR THE SALE OF THE PUBLIC LANDS.

Besides this law for the benefit of agricultural colonists, the late session of the Paraguayan congress, with a view to stimulate the pastoral industries, also passed a law for the sale of the public lands of the nation, which embrace a large portion of its superficial area. For this purpose it divides them, according to their advantages and accessibility, into three distinct classes, and the prices fixed by the Government are as follows: for lands of the first class, *i. e.*, those which are considered the best, the sum of $1,500 per square league; for lands of the second class, $1,000 per square league, and for those of the third class, $800 per square league, and the bonds of the Government will be received in payment on certain conditions mentioned in the law. Already, while I was in Paraguay, I met a number of gentlemen of foreign nationality who were prospecting with reference to the purchase of lands with a view to embarking in cattle farms.

CATTLE FARMING.

For this industry Paraguay, owing to its magnificent grasses and abundance of shade and water, seems to be especially favorable. In former years it had been its leading industry, the wealth of the nation in great part consisting of horned cattle; but the exigencies of the war swept off everything, and at its close there were not cattle in the country sufficient to supply the people with beef. Within the last few years, however, large numbers have been driven from the province of Corrientes, Argentine Republic; and now the number of horned cattle in Paraguay is estimated to be about 500,000, the leading *estancieros* owning from 4,000 to 8,000 each. Some of the cattle farms of the interior are remarkable for their natural beauty, the alternations of meadow and park, with intervening water-courses, giving them the appearance of cultivated preserves. Persons desirous of information on this subject or the price of Paraguayan lands would do well to address Messrs. Croskey & Herbert, land agents, Asuncion.

SHEEP.

There are but few sheep in the country. It seems somewhat strange that so important a source of national wealth as wool-growing has thus far had no development. Some undertake to prove that the climate is too warm for sheep; but I doubt very much if this is so. According to the last report of the minister of the interior a movement is now being made to foment this industry and improve the breed, and it may be that in the future there will be more attention paid to the rearing of sheep.

RAILWAY FROM ASUNCION TO PARAGUARI.

One great obstacle to opening up of the interior of Paraguay is the want of adequate means of communication. The roads throughout the interior are generally bad, and there are but few bridges over the numerous water-courses. The only railway is that from Asuncion to Paraguari, a distance of not quite forty miles. This was completed in 1864 by the Paraguayan Government, and it was the original intention to

extend it as far as Villa Rica, but this was prevented from want of funds. It was sold to a private corporation in 1877 for the sum of $1,000,000, and paid for in treasury scrip, which was then at a great discount. Though considerable amounts have been spent in repairs, the track is in an unsatisfactory condition. The amount of traffic over the line, however, is so inconsiderable that the proprietors do not feel like making any improvements. The last report furnished by Mr. Closkey, who is in charge of the business of the line, shows that the total traffic from all sources for the year amounted to only $61,207. The trains run only four times a week, leaving Asuncion in the morning and returning in the evening. To accommodate the poverty of the country four classes of passengers are provided for. The distinction between the third and fourth classes is that the former are carried in box cars with seats, and the latter in platform cars without seats, and with only a railing around the sides, the prices of the fares corresponding to the accommodations.

¶In 1876 a scheme was projected by the Brazilian Government to run a railway from Asuncion through Paraguay and the Brazilian province of Paraná to Paranaguá; and the proposed line was even surveyed, but in the midst of other more pressing public works nothing has yet been done towards its construction by that Empire.

TELEGRAPHIC COMMUNICATION.

There is but one line of telegraph in Paraguay which follows the railroad from Asuncion to Paraguari. An important line, however, is now being constructed to connect Asuncion with the city of Corrientes, in the Argentine Republic, from which pointt here is direct telegraphic communication with Buenos Ayres and the rest of the world. The effect of the opening of this new line upon Paraguay will be of almost incalculable advantage, its present isolated position making all commercial and business transactions with other countries slow and tedious.

ORGANIZATION OF A NATIONAL BANK.

At the last session of the Congress of Paraguay a law was passed for the organization of a national bank with an authorized capital of $2,000,000, the Government being one of the largest stockholders. It is expected that this institution, which will also be the fiscal agent of the Government, will be ready for business next year. At present the only bank in the Republic is the Bank of Paraguay, with a capital of $100,000, doing business in Asuncion, and furnishing the currency which circulates among the people. It enjoys some fiscal privileges, is exempt from taxation, and has the power of fixing its own rate of interest. It is, however, a very small institution, and lacks facilities for doing business outside the country. In the present condition of trade the balance being in favor of the Argentine Republic, the bank-notes of the latter not only pass current in Paraguay, but are even at a premium for the purpose of making remittances, the price of exchange in favor of Buenos Ayres sometimes reaching to 5 per cent.

DIRECT TRADE WITH EUROPE.

In regard to the commercial outlook of the country there is little at present to be said. The demands of the population are so small that few opportunities have yet offered for profitable trade with outside na-

tions. There have been various projects for opening a direct trade with European ports; and the well-known Lamport and Holt line of ocean steamers have been approached with a view to sending their steamers through from Liverpool to Asuncion without breaking bulk; but, in the absence of profitable freights, of course such a thing cannot be expected. Indeed, owing to the shallow water in the Paraná at some seasons, the scheme would require the building of boats of much lighter draught than those at present in the service of that company.* With the development of the agricultural and pastoral possibilities of the country there may ultimately spring up a demand for American machinery; but at present all the operations of husbandry are accomplished with the most primitive implements of industry. About the only articles of American manufacture which I saw during my visit to Asuncion were a few plows, spades, and hoes, a quantity of starch, and De Voe's kerosene oil, all, of course, purchased from importers in Buenos Ayres.

MANUFACTURES OF THE COUNTRY.

The manufactures of Paraguay are still so inconsiderable as scarcely to be entitled to any special notice. After the death of the tyrant Francia and the opening of the country to foreign capital by the elder Lopez, a company of American capitalists organized under the laws of Rhode Island, and with corresponding privileges from the Paraguayan Government, not only for commercial, but also for manufacturing purposes, commenced operations in Asuncion, with Edward A. Hopkins, esq., as general agent, under the most promising auspices, and the development of that republic in the line of various important industries seemed almost a fixed fact. In a very short time, however, the company became the victim of the caprices and jealousies of Lopez, and was dismissed from the country almost without notice, to the utter ruin of those who had invested their money and their time in the enterprise. Since then the vicissitudes and misfortunes of Paraguay have prevented any further attempts to establish manufactures there; though now that the internal quiet of the nation is fully assured, and those who are in charge of the Government are aroused to the importance of attracting foreign capital, I am informed that those offering to engage in manufacturing pursuits will be accorded the most liberal inducements.

Fiber.—A few years ago Messrs. S. B. Hale & Co., American merchants of Buenos Ayres, who own an extensive tract of land a few leagues above Asuncion on the Paraguay River, undertook the preparation of fiber, not only for roping and cordage, but also for woven goods, from a native Paraguayan plant called *cazá-guatá*, a species of alloes, I believe, which grows spontaneously in that part of the country. The tests which were made by experts from the United States were entirely satisfactory, the fiber being equal if, indeed, not superior to any that is produced in the world; but the field of operations was so inaccessible, and so remote from market, that the industry was finally given up. There is, however, a future for this fiber equal to the present which manila enjoys.

* Since the above was written I find the following paragraph in the Buenos Ayres Standard: "A colleague announces the formation of a company to run steamers from Spain to Uruguay, Argentine Republic, and Paraguay. This is good news for Paraguay. The first steamer of the company is in course of construction and will be called Solis, after the discoverer of the River Plate; the second steamer will be called the Colon."

Pottery.—The exceedingly fine quality of the clays of Paraguay has long been known. Indeed, almost from time immemorial the natives have produced a variety of red earthenware, consisting of water jars, crocks, pitchers, basins, piping, drain-tiles, roofing-tiles, flooring-tiles, bricks, &c., all hand made, whose beauty was remarkable and whose durability almost marvelous. They have found a ready sale not only at home, but in all the neighboring countries. Last year, well-known parties from England, with a large capital at their disposal, brought out all the necessary machinery for embarking in this business upon an extensive scale; and, while in Paraguay I visited their works at Areguá, a station on the railway, about 20 miles from Asuncion. The industry promises to be a most important one for Paraguay.

White rum.—Another manufacture, which if properly attended might become very important, is that of the production of *caña*, a species of white rum distilled from the sugar cane, and strong in essential spirits. It is almost exclusively the drink of the country, and is extensively consumed all over this part of South America. Its production is, however, conducted in the most primitive fashion. In one distillery that I visited, the juice of the crushed cane was fermented in a large solid trough, dug out of the trunk of an enormous tree, while the condenser was a worm set in a wooden cask. A German colony, recently settled in the *partido* of Yaguaron, have, I understand, embarked in this industry, and in connection with it also that of the distillation of essential oils from the bitter orange, the lime, the banana, the tamarind, and other fruits of the country. In Asuncion is an establishment where *liquors* flavored with the different fruits of Paraguay are manufactured in considerable quantities, and of a purity and quality that are a great improvement on those imported from France.

Rubber.—There is a tree of the country, everywhere very abundant, called *Mangá-icé*, or India-rubber tree, from the sap of which a most excellent article of gum-elastic is manufactured. In Villa San Pedro this industry is carried on to a considerable extent, but in a very primitive way. With the investment of a little capital it might become a valuable addition to the manufactures of the nation, the demand for the article abroad always insuring a ready market.

Tobacco and cigars.—I have already incidentally referred to the manufacture of tobacco and cigars. This industry might readily be made to assume much larger proportions, the exports of the article already being next in value to that of the *yerba moté*. The largest plantations are in Villa Rica, though the product of those in Luqué, has the best reputation, being esteemed before that which is produced in Bahia.

Though everybody smokes in Paraguay, I cannot say much for the manner in which the cigars are made, those smoked by the Paraguayan women, and which are seen in their mouths from morning till night, especially being unwieldy and absurd in their proportions. There are, however, several establishments where nicely manufactured and merchantable cigars are turned out to the trade.

Paraguayan lace.—The most remarkable industry in Paraguay, however, is the manufacture of lace. It is a specialty of the country, entirely in the hands of the Paraguayan women, and finds a ready sale in all parts of South America. The skill which they display with the needle is wonderful, the art being another remnant of the lessons taught by the Jesuits. The specimens of edging, inserting, lace handkerchiefs, worked chemises, head-gear, mantillas, curtains, shawls, tidies, sofa-backs, and even hammocks, which these women sell at very mod-

erate rates, would in any other country in the world command exorbitant prices.

Cotton cloth.—They also weave a cotton cloth, which they use not only for underclothing, but dresses likewise, of both men and women.

Puzzle rings.—I may also here mention the Paraguayan puzzle-rings, most ingeniously worked in links from fine gold, a great curiosity which every visitor carries away with him as a souvenir of the country.

ASUNCION AND ITS SURROUNDINGS.

No person, however, can go to Paraguay without carrying away pleasant impressions. While its most sad history fills him with pity, the abundant hospitality of the people, who, under exceedingly adverse circumstances, have proved themselves to be as generous as they are brave, at once assures him that he is in the midst of friends. In Asuncion, the capital, there are many cultivated people, and the better classes have an air of refinement equal to that of any city of South America. Here the authorities of the nation all reside. Asuncion possesses a national college, with full professorships, and a number of municipal schools for both sexes. These, as well as a system of public schools throughout the interior, are supported at the expense of the national treasury. There is also a public library in the city, containing several thousand volumes, and on its shelves, as well as on those of some of the citizens, I was pleased to observe many standard American authors, such as the works of Kent, Story, Wheaton, and Greenleaf, in the law, and of Bancroft, Prescott, Irving, and Motley, in history, and full sets of Appleton's Encyclopedia.

The most important buildings are the palace of the Government, the cathedral, the cabildo, the commendancia, the national college, the hospital, the central market, the railway station, and the churches of San Roque and of San Francisco. A tramway, under the management of Mr. J. D. Horrocks, an English gentleman, connects the port with the railway, thus passing through the entire extent of the city. Situated, as it is, on the slopes of a beautiful hill, with the river circling around it on two sides, with a distant view of the Lambaré peak on the south and the monotonous grandeur of the virgin forests of the Gran Chaco on the west, presents quite an attractive appearance; while its suburbs are dotted with innumerable country seats (quintas), orange groves, and small farms. Asuncion, however, is now only a wreck of what it once was; and the remains of the extensive arsenal built by the second Lopez; of the massive theater occupying a whole square, which was never completed; of the magnificent palace which was commenced just before the war and whose wonderful architecture, after having been "stormed at by shot and shell," is now but a grim and mournful ruin, are all suggestive reminders of "the glory which has departed."

THE HOPEFUL SPIRIT OF THE PEOPLE.

It is gratifying, however, to note the hopeful spirit with which the present Government, fully appreciating its fallen fortunes, is seeking not merely to restore but to raise the country to a higher level of civilization and the people to an increased measure of prosperity and happiness. In this view, I quote, in translation, the following extracts from the late report of the minister of the treasury:

I am pleased to be able to inform you that the last year, so far as regards our financial position, has been the most satisfactory we have had for a long time. I do not say, however, that we have attained to the summit of our aspirations. We are

still far, very far from the prosperity that we wish for. Indeed, scarcely can we say that we have taken our first step upon the road of progress; and we should make every effort that our sacrifices toward so desirable an end shall not have been in vain.

While endeavoring to improve our financial condition, we should not merely aim to meet the outlay required by the public service, but we should endeavor at the same time to assist the development of private wealth, which is the basis of all true national prosperity. To the attainment of this object it is not alone sufficient that the Government should give its protection and assistance, but the people at large should co-operate, by contributing to the establishment of useful industries. On this basis the Government has sought to foster, by all lawful ways and means, the agriculture, the commerce, and the various industries of the nation; not merely by bestowing upon them such guarantees as were in its power, but by the concession of privileges to such enterprises as should be projected. If our progress has thus far been slow, it is the result, not of the indifference and apathy of the Government, but to the unavoidable difficulties with which these three important branches of national prosperity have had to contend, owing to the lack alike of capital and enterprise, those essential prerequisites of progress and development.

Paraguay offers a vast field for the safe employment of active capital; but the obstacles I have referred to and the lack of confidence which has been caused by the political vicissitudes to which the Government has been subjected ever since the late disastrous five years' war, and, above all, the blunders committed by the first Government organized in the country after that overwhelming catastrophe, have for a long time paralyzed our progress. It is difficult to acquire credit; and when once lost, it is more difficult to recover it. Thanks, however, to the efforts of those now in power, I am able to say that our internal credit is once more assured, and, owing to the confidence which this fact inspires, the development of our commerce, our agriculture, and our industries has now, it would seem, indeed commenced in earnest.

THE PRESIDENT'S VIEWS OF THE SITUATION.

The message of President Cavallero to the last Paraguayan Congress exhibits an equally hopeful spirit. I quote, in translation, a few of its paragraphs:

We begin to experience at last the result of the patient labor we have undergone in raising the country from its prostration, in repairing past disasters, and in giving a new impulse to our onward march. We have required a large measure of patience and self-denial to attain these results; but, fortunately, after having overcome the pressure of hard and difficult trials, we are now able to feel assured that the work of national reconstruction is on a firm foundation, and that the country is once more moving forward with a steady step to a prosperous future. In this noble work it is consoling to observe that the people themselves have taken the most important part. The cruel misfortunes which they have had to endure for a time saddened their spirit, but they were not able to crush it; and to-day the noble work which has been dignified by their sufferings begins to exhibit the victory which peace can achieve for a country.

This transformation is exerting a happy influence in behalf of public order. The Constitution is no longer a dead letter. Its prescriptions are no longer faithless promises. The independent action of the different departments of the Government is no longer a lie. The sacred guarantees of life, honor, and property are no longer vain chimeras.

Everything now favors the advancement of the country. The wonderful fertility of the soil, the blandness of the climate, the development of its splendid possibilities, all invite men from other countries to come and inhabit this new land of promise, and, in the enjoyment of its liberal institutions, make it their adopted country. A nation is not precluded from being great and prosperous by the small extent of its territory. The riches of a nation are not measured by its size, but by its cultivation, its civilization, its commerce, and its industries; and our every effort should be directed to the development of the elements which so marvelously exist around us, and in which our future greatness must consist. The state of the country is eminently satisfactory; our pastoral industry is increasing; our agriculture is occupying larger areas; our commerce is assuming greater importance, and our industries are gradually expanding. What is more, all the departments of the Government are working harmoniously and in unison, while the administration of justice through the courts, those safeguards of the rights of the people, move on with commendable regularity.

NATIONS REPRESENTED IN PARAGUAY.

These extracts exhibit the pluck and perseverance with which the Paraguayans are struggling for a higher place in the category of nations. It is to be hoped, indeed, that at last a brighter day is beginning to dawn upon that unfortunate country. During my recent visit there I was pleased to notice that as an act of friendly recognition, not merely the nations of South America, but nearly all the leading ones of Europe were duly represented at Asuncion, either through consulates or legations, and in some cases through both; *the flag of the United States alone seemed to be missing.* It occurred to me that if we could do nothing more, we might at least afford to give to that struggling republic the outward assurances of our neighborly interest, and the encouragement of a closer consular, if not diplomatic, representation. We had such representatives resident there when tyrants and dictators were desolating that fair land. Why should we not have them there now, when patient, patriotic men are trying to redeem its hard fortunes? We have, it is true, a representative for both Paraguay and Uraguay, which are a thousand miles asunder, but his official residence and the field of his services are in Montevideo, a running visit perhaps once a year being the extent of his mission to Asuncion. If I am correctly informed, we have had no consul appointed for Paraguay since 1853, and I believe the flag of the United States, which, as an emblem of republicanism and popular sovereignty, is a grateful and reassuring sight to all struggling peoples, has not been seen in Paraguay for many years. Its presence there once more could not fail to be appreciated by the people, not merely as a token of our good-will, but as a suggestion of our own great example in the successful solution of the delicate problem of self-government.

THE OUTLOOK FOR TRADE WITH THE UNITED STATES.

There was a time when the United States seemed to take a greater interest in the commercial development of this part of South America; and the explorations of the great water-courses which drain it, by the United States steamer Waterwitch, under Capt. Thomas Page, U. S. N., by order of our Government, in 1854–'56, are still remembered by the people of Paraguay. They were made just after the navigation of the Rio de la Plata and its great tributaries had been declared free to the world, and they were conducted in the interests of commerce. The information which Captain Page's report embodies in regard to those rivers is in many respects as correct to-day as it was at the time it was prepared. Now that Paraguay is once more restored to commercial enterprise why not seek to profit by our knowledge of the interior of that country and of the rivers that lead to it? The first move to this end would seem to be the appointment of a consular or commercial agent to represent our interests there. It is true, as has been seen, that our commerce with Paraguay is at present almost *nil;* but so also is that of all the other manufacturing nations. So far as foreign commerce is concerned that country is really *unoccupied ground;* and this is more than can be said in regard to any other that I know of. Quite all the trade of Paraguay in manufactured articles of prime necessity is now conducted at second-hand through the Argentine Republic. Might we not, if proper efforts were made, go in and secure this trade at first-hand?

The cotton and woolen goods sent to Paraguay last year amounted to nearly $500,000; the hardware and cutlery, including a few agricultu-

elry, all reached to considerable amounts. It may be argued that this trade is too inconsiderable to be worthy of our attention. But everything must have a beginning, and, in the nature of commerce, it is destined to increase. Meanwhile it would be a great deal in our favor to have obtained a commercial foothold in the country. To effect this the presence of a consular or commercial agent, duly commissioned by our Government, might greatly assist. Other nations, ever watchful for opportunities to extend their trade and seek out new markets for their manufactures, already have their eyes on this unoccupied field of operations.

CONCLUSION.

In concluding this report, I would state that in the estimate I have attempted to draw of the present condition of Paraguay, and of its commercial, industrial, and political outlook, I have obtained my information where it was possible from original sources, and in all cases have given figures where I was able to find them rather than opinions, availing myself. however, where figures were not accessible, of the views of those who have a personal knowledge of the country. In my opinion, if those who are conducting its destinies continue faithful and patient, there is an outcome to that unfortunate Republic. The country is abounding in natural resources and raw materials, but science and modern methods have done next to nothing to utilize them. The people are nearly all poor. There is little individual wealth. The richest men have little more than wild lands to represent their riches. There are, however, very few who are actually needy; for, almost without any exertion, the spontaneous productions of the forests bountifully supply the necessities of life. In its new departure, however, as a progressive nation, the first great want of Paraguay is population; *men* especially are in demand, not merely to restore the equilibrium of the sexes and repopulate its waste places, but to develop its immense agricultural possibilities, to increase its pastoral wealth, and to foment a hundred different lines of industry for which the country offers marvelous opportunities. The accession from Europe of a few thousand skilled workmen, who, unlike the present degenerate masses, are willing and ready to take advantage of their opportunities, would soon make their labors felt in many different ways upon the fortunes of the nation; while their example, reacting upon the body politic, would tend to inspire a confidence in the Government, which if not capital itself, would be almost equal to it; for with it, capital with which to develop the waiting riches of the country would speedily begin to flow in. Without an increase of men and capital the progress must continue to be slow; but with it, the Republic of Paraguay, though handicapped and crippled as she is, will hasten not only to attain to a full measure of prosperity, but, from her overflowing horn of plenty, be able to distribute a large surplus to the other nations of the earth.

E. L. BAKER,
Consul.

UNITED STATES CONSULATE,
Buenos Ayres, December 15, 1883.

AN AMERICAN SAMPLE-ROOM IN TURIN.

REPORT BY VICE AND DEPUTY CONSUL DE ZEYK.

Turin is in a central position, whence goods might in the cheapest and shortest time be transported to any other part of Italy; considering that the railway net-work now in operation was projected at a time when Turin was to all intents and purposes to remain the capital of all Italy, and laid out with a view to equally subserve war as well as peace or commercial purposes, diverging from this center in every radius to all the most distant cities of the kingdom, with main lines and easy connections, making the communication between this and the more important places in the whole kingdom cheap and expeditious. Turin is, besides, in the immediate neighborhood of the unusually commodious and by far the most frequently visited port of Genoa, between which and our Atlantic coast there has for time immemorial always existed a direct shipping commerce, there being now plying the regular lines of Florio Rubattino and the New York and Mediterranean steamship lines. Turin and vicinity, possessing quite extensive establishments of cotton, hemp, woolen, paper, &c., mills, machine-shops, cast-iron foundries (23), military arsenal, fire-arms, and gun factory, can be put down for the chief marketing place for at least Northern Italy, where, for a city of 250,000 inhabitants, there is almost an extraordinary lively trade and brisk demand for the staple articles of almost every country in the world, making it for the resons just enumerated and for the regular conflux, at seasons, of all sorts of business men, an eminently fit place for the establishment of a sample-room for all Italy.

Without wishing to enter here into further details which can be given at length whenever desired by parties wishing to commit their goods to the superintending care of this consulate, I will merely state the basis upon which, independent of private enterprise in which any American citizen will be heartily sustained by me, I consider a sample-room can most conveniently be established here.

By the beginning of March, 1884, arrangements will have been concluded under the direct control of this consulate to receive goods destined for exhibition at this sample-room, provided:

(*a.*) That all freights will be prepaid by the shippers, so that goods should be delivered free of all charges to my care at Turin.

(*b.*) I will not be held responsible to shippers, owners, or their agents in any cases of partial damages or entire losses of their goods happening before their delivery to my care.

Goods can best be forwarded, via New York and Genoa, through Messrs. Phelps, Bros. & Co., 54 and 56 Broad street, New York, who will also effect the custom-house clearances at Genoa and the safe delivery of packages, &c., to me at Turin, according to invoices, which, together with written instructions as to the final disposition of the sample goods, must invariably be sent to my address, stating the exact amount of the prices at which the goods can be disposed of, in which case the proceeds will, after deduction of a reasonable commission for the covering of sundry expenses for storage, insurance, clerk hire, porterage, &c., be duly remitted to the shipper, and when the goods are to be returned, the commission for the sundry expenses must be remitted to me at the same time with the order for reshipment.

I will in the manipulation of this sample and eventually sales room be assisted by Mr. Baumberger, late vice-consul at Genoa, whose fifteen years' experience in the commission and importer's business vouches for his fitness, who is besides very well known among several of our first manufacturing firms. With his intimate knowledge of the place, and of the business which has to be transacted, consignees can feel assured of having discovered in the arrangement thus offered the best agency to forward their interests in this country and the American trade will have found, in the establishment of a sample-room contemporaneously with the opening of the general Italian exhibition at Turin, the most practical solution of the very difficult problem of introducing goods, wares, and merchandise into a distant and new market without the inevitable expenditures for traveling agents, advertisements, &c., which are otherwise to be reckoned as necessary conditions for the success of every enterprise abroad.

I append a list of articles for the information of those who have never traveled or done any business in Italy, which will, to my knowledge, meet with ready sale in these parts, and which form in reality but a very small portion of the long schedule of every sort of goods, wares, and merchandise which are imported from the many manufacturing cities of Europe, and with which the American goods can, I dare say, with a few exceptions, easily compete at the will of their manufacturers, provided they will endeavor to send their goods to this market under the same conditions as the French, English, German, and other importers do, and which may thus be summed up:

The terms of sale or payment should be at least as tempting or advantageous as those usually offered by the importers of other countries, and which I will at once state to be for no branch of trade shorter than three months after the actual delivery of the purchased articles. And I would not advise, as it would be useless for anybody to try to enter into business relations with the Italian tradesmen unless under the strict observance of the just-named condition.

The following importations are mainly recommended:

House furniture: Common walnut, new style of folding easy chairs and sofas.

Silver-plated ware: New style, in fine carving.

Garniture for chimneys: Subject, imitation of old copper.

Mechanical toys.

Cheap watches and clocks.

Gas-stoves: Heating and cooking purposes.

Wool carpets: Brussels, two and three ply.

Cotton prints.

Petroleum lamps: Improved fixtures and new styles.

Steam engines from two to three horse-power, with and without steam boilers.

India-rubber and leather beltings.

Light wood working machines: Such as planing, circular, and band saws.

Agricultural machinery: Small dimensions.

Doors, window-sashes: French style as samples, to get orders by for different dimensions.

Portable forges and blowers.

Portable flour-mills.

Hand rock-drills.

Hydraulic jacks, common screw-jacks.

Screw hoisting-machines, differential pulleys.

Revolvers, good arms of precision of no less length than 174 millimeters.

Hunting guns: Breech-loaders, rifles.

Street locomotives, small locomotives, 3 to 6 horse-power, for agricultural purposes.

A. J. DE ZEYK,
Vice and Deputy Consul.

UNITED STATES CONSULATE TURIN,
Turin, October 30, 1883.

IMPORTS AT HAVRE FROM THE UNITED STATES.

REPORT BY CONSUL GLOVER.

Statement of direct imports into Havre from the United States for the quarter ending September 30, 1883.

Agricultural implements:	
Packages	568
Alligator skins:	
Barrels	17
Apples (dried):	
Barrels	756
Cases	101
Bark:	
Sacks	324
Beef:	
Barrels	162
Billiard balls:	
Case	1
Bird skins:	
Case	1
Black lead:	
Barrels	27
Cases	3
Bones:	
Sacks	218
Bristles (pigs'):	
Bales	507
Cases	5
Casks	16
Butter:	
Tubs	400
Cattle hoofs:	
Sacks	10
Cedar wood:	
Logs	216
Champagne:	
Cases	225
Cigars:	
Cases	5
Cocoa:	
Sacks	443
Coffee:	
Barrels	64
Sacks	19,470
Copper:	
Slabs	1,091
Ingots	768
Casks	2,415
Cotton:	
Bales	30,221
Cotton goods:	
Case	1
Crucibles:	
Casks	74
Dividivi:	
Sacks	73
Drugs:	
Cases	24
Emery paper:	
Cases	2
Fish (preserved):	
Cases	50
Flour:	
Sacks	587
Barrels	40
Gasoline:	
Barrels	200
Goat skins:	
Bales	107
Hair (animal):	
Bales	33
Hair rope:	
Bales	30
Hardware:	
Packages	76
Hemp:	
Bales	127
Herbs:	
Packages	5
Hides:	
Packages	1,804
Sacks	74
Hides	8,703
Horns:	
Sacks	1,285
Horse hair:	
Sacks	35
Bales	128
India rubber:	
Bales	196
Cases	8
Iron ore:	
Sacks	15
Kid skins:	
Bales	1[illegible]

Statement of direct imports into Havre from the United States, &c.—Continued.

Lard:	
Packages	5,414
Tubs	9,520
Tierces	16,215
Lard oil:	
Tierces	1,600
Barrels	1,690
Lobsters:	
Cases	12,999
Lumber:	
Beams	2,642
Planks	18,708
Spars	2
Tons	800
Machines (sewing):	
Cases	721
Machinery:	
Packages	119
Mahogany:	
Pieces	105
Maize:	
Tons	1,300
Cases	70
Maple wood:	
Logs	17
Metals (old):	
Packages	4
Miscellaneous:	
Packages	4,690
Naphtha:	
Barrels	10,521
Nut wood:	
Logs	20
Oats:	
Packages	21
Oil:	
Barrels	3,096
Cases	693
Orange peel:	
Sacks	600
Paint, varnish, &c.:	
Cases	378
Pearlash:	
Barrels	10
Pearls:	
Package	1
Perfumery:	
Cases	47
Petroleum:	
Barrels	62,268
Pins:	
Packages	50
Pitchforks:	
Cases	134
Potash:	
Barrels	197
Preserved meat:	
Cases	3,064
Raisins (dried):	
Case	1
Rice:	
Tierces	20
Rice roots:	
Bales	352
Roots:	
Sacks	6
Satin wood:	
Logs	52
Seeds:	
Sacks	135
Case	1
Shells:	
Packages	8
Silk (raw):	
Bales	4
Silver:	
Bars	104
Spermaceti:	
Boxes	25
Sponges:	
Bales	34
Stationery:	
Packages	7
Staves:	
Number	141,945
Tallow:	
Hogsheads	1,993
Tierces	3,851
Telegraph wire:	
Cases	12
Timothy seed:	
Sacks	100
Tobacco:	
Hogsheads	3,818
Cases	30
Tortoise shell:	
Barrels	7
Case	1
Turpentine:	
Casks	1,118
Whalebone:	
Packages	108
Cases	31
Wheat:	
Tons	10,600
Sacks	47,798
Wool:	
Bales	30

Statement of direct imports into the Port of Havre from the United States during the quarter ending December 31, 1883.

Apples (dried):	
Cases	120
Packages	1,002
Barrels	27
Bark:	
Sacks	4,962
Bales	261
Beef:	
Barrels	85
Tierces	10
Blacking:	
Buckets	100
Packages	52
Barrels	40
Bones:	
Sacks	356
Brandy:	
Cases	3
Bristles:	
Bales	126

Statement of direct imports into the Port of Havre from the United States, &c.—Continued.

Bristles—Continued.	
Casks	8
Butter:	
Tubs	362
Cacao:	
Sacks	67
Cedar:	
Logs	502
Cement:	
Barrels	7
Cigars:	
Cases	5
Clocks:	
Cases	55
Clover seed:	
Sacks	4,752
Barrels	550
Coffee:	
Sacks	3,499
Copper:	
Casks	805
Slabs	1,137
Barrels	275
Sacks	1,228
Bars	256
Cotton:	
Bales	149,751
Crucibles:	
Packages	17
Feathers:	
Cases	6
Flour:	
Sacks	2,497
Cases	40
Barrels	17
Furniture:	
Cases	12
Furs:	
Cases	2
Hams:	
Cases	25
Hides (dry, salted, &c.):	
Skins	6,677
Bales	121
Hogsheads	4
packages	1,183
Horns:	
Sacks	1,804
Horse hair:	
Bales	84
Intestines:	
Tierces	14
Iron:	
Package, rods	1
Cases	20
Lace work:	
Cases	11
Lard:	
Buckets	1,620
Barrels	200
Tierces	18,526
Tubs	16,208
Cases	638
Packages	875
Lard oil:	
Barrels	530
Tierces	25
Laths:	
Bundles	648
Lobsters:	
Cases	4,262
Lumber:	
Cargo	1
Pieces	3,715
Machinery:	
Packages	1,129
Cases	853
Mahogany:	
Logs	41
Maize:	
Sacks	1,840
Bushels	17,642
Cases, prepared	60
Maple wood:	
Logs	74
Pieces	45
Minerals:	
Cases	28
Mineral oil:	
Barrels	650
Miscellaneous:	
Cases	106
Packages	1,337
Sacks	66
Musical instruments:	
Packages	17
Naphtha:	
Barrels	35,780
Nut wood:	
Logs	644
Oars:	
Oars	50
Packages	68
Oats:	
Sacks	266
Oil:	
Barrels	2,066
Cases	843
Buckets	33
Tierces	60
Oysters:	
Cases	29
Paper:	
Packages	200
Pease:	
Sacks	113
Pepper:	
Sacks	670
Pearlash:	
Barrels	15
Petroleum:	
Barrels	95,979
Pitchforks and handles:	
Cases	681
Packages	1,790
Pitch-pine:	
Pieces	283
Pork:	
Barrels	90
Potash:	
Barrels	107
Casks	10
Preserved fruits:	
Cases	562
Sacks	10
Preserved meats:	
Packages	2[illegible]
Cases	1,[illegible]

Statement of direct imports into the Port of Havre from the United States, &c.—Continued.

Rum:	
Barrels	16
Rice:	
Tierces	20
Rice root:	
Bales	96
Rubber:	
Cases	4
Satin wood:	
Pieces	85
Logs	29
Scales:	
Packages	4
Seeds:	
Sacks	202
Cases	283
Barrels	4
Shells:	
Sacks	50
Cases	3
Silk:	
Cases	12
Bales	2
Silver:	
Bars	62
Sacks	637
Silverware:	
Case	1
Sponges:	
Bales	261
Stationery:	
Cases	15
Stoves, &c.:	
Packages	49
Staves:	
Number	144,162
Sumac leaves:	
Sacks	27
Tallow:	
Tierces	841
Casks	324
Hogsheads	844
Barrels	357
Timothy seed:	
Sacks	388
Tobacco:	
Hogsheads	2,401
Tierces	54
Barrels	198
Box	1
Tortoise shells:	
Barrels	11
Cases	2
Vanilla:	
Cases	17
Varnish:	
Cases	640
Whalebone:	
Packages	244
Whale oil:	
Casks	15
Barrels	685
Buckets	35
Wheat:	
Sacks	80,870
Bushels	23,000
Whisky:	
Barrels	2
Cases	12
Wine:	
Cases	125
Wool:	
Bales	77
Worked wood:	
Cases	9
Zinc:	
Cases	15

JOHN B. GLOVER,
Consul.

UNITED STATES CONSULATE,
Havre, December 31, 1883.

AMERICAN AND OTHER PRODUCTS AT GIBRALTAR.

REPORT BY CONSUL SPRAGUE.

NAVIGATION.

In reporting on the navigation and commerce of Gibraltar during the quarter ending December 31, 1883, I regret much to state that no merchant vessels under our flag have entered this port during that period; nevertheless the steam navigation has increased, 1,523 merchant steamers of all nationalities having arrived here, of which 1,172 were under the British flag. As to sailing ships of all nationalities they only numbered 138, exclusive of the usual Spanish and Portuguese lateen coasting crafts.

Besides the issuing from this consulate of twelve bills of health dur-

ing the past quarter, ninety-four indorsements to bills of health also took place, all for the use of steamers bound to United States ports, of which 88 were under the British flag.

American products.—What produce has been imported direct from the United States, and which consisted of leaf-tobacco, flour, wheat, and petroleum, was brought to this port exclusively by Italian steam and sailing vessels. Petroleum formed the principal article, which cannot be substituted from any other country but the United States.

Tobacco.—Although the tobacco trade has fallen off considerably for the reasons already often indicated, the article still continues to be imported, not only from the United States, but also from Germany, Hungary, and India. The commercial treaty now in progress between Spain and Great Britain, if carried out, may likely affect in a great measure the interests of this place with regard to the weed.

Coal.—The coal trade at this port is always on the increase, consequent upon the extension of steam navigation, which is likely to continue prospering so long as no other substitute can be found for coal.

Wheat and flour.—The importations of wheat and flour from the United States have been on a very moderate scale, on account of the great competition existing with the supplies of flour that are constantly arriving from Marseilles and Algeria, which almost exclude any profit being derived by importing direct from the United States, owing to the difference in freight.

FOREIGN WHEAT IN FRANCE.

Since 1878 the importation of foreign wheat into France has greatly increased, as besides what the United States so abundantly sends to her, Australia, and particularly India, are now producing so largely as to be able to send vast quantities of wheat to European markets, and it is even said that the Argentine Republic is also likely to be a large exporter to Europe.

These circumstances have so far affected the agricultural prospects of France, as to render those interested in the raising of cereals in that country anxious to endeavor to impress on their Government the importance of establishing an agricultural department similar to that at Washington; it would enable those interested in agricultural pursuits to readily ascertain the exact consumption of wheat in France, together with all other statistical information regarding the condition of the crops, stocks on hand, and everything else connected therewith, causing printed exports to be distributed throughout the country at reduced rates, that every one might have the opportunity to obtain all reliable information to guide them as to the true agricultural situation at all moments.

HORATIO I. SPRAGUE,
Consul.

UNITED STATES CONSULATE,
Gibraltar, January 5, 1884.

CANADIAN, BRITISH, AND AMERICAN SHIPPING AND COMMERCE.

REPORT BY CONSUL CRAWFORD, OF COATICOOK.

CANADIAN SHIPPING.

The report of the minister of marine shows that her shipping industry stands *fourth* on the list of ship-owning countries, Great Britain being first, the United States second, Norway third, and Canada fourth.

There is but little difference between the tonnage of Norway and Canada, and with only one tenth the population of the United States, her tonnage is over one-half.

Among the list of vessels on the registry books of the Dominion there are two hundred and fifty-five sailing and one hundred and forty-two steam vessels built in the United States.

EFFECTS OF THE PROTECTIVE POLICY.

Previous to the adoption of the national policy Canada was almost entirely an agricultural country. The surplus capital sought an investment, and in this, as in all other countries, it sought that which would pay the greatest per cent. of profit. In the absence of protection, manufacturing industries offered no inducements. Manufactured goods were furnished by England and the United States at prices with which she could not compete.

The Dominion Government followed the example of England in regard to trade and also the policy of granting subsidies to aid in building up and maintaining her commerce. She held out such inducements to capital that the surplus wealth was largely invested in ships and shipping until she stands fourth in rank of commercial nations.

The adoption of the national protective policy in 1878 has had the tendency to turn capital into other channels. Under the fostering care of protection manufactures sprang up all over the Dominion, immense profits were realized, and the manufacturing industries are fast absorbing the surplus capital of the country and drawing large amounts from the outside world. The result of this cannot be otherwise than (in spite of subsidies) the decline in her commerce; less numbers of vessels will be built, and the same complaint that is made in the United States will be heard.

AMERICAN VS. ENGLISH SHIPPING.

One thing should be borne in mind: In fighting battles with other nations we must meet the enemy with at least as good weapons as are used by them against us.

When we look at England, with her large accumulation of wealth, more than is required for the maintenance of her supremacy as a manufacturing nation, it is not surprising that she stands to-day at the head of the list as a commercial nation. She has at all times been ready and willing to grant aid to any line of vessels, so there will be no chance for opposition, from any nation less liberal than their own. England will maintain her lines, to the sacrifice of all charges for freight, so long

as any other nation or individuals oppose her with vessels dependent alone upon the freight receipts for their expenses and profits.

It is not to be presumed that a young nation, like the United States or Canada, has that large accumulation of wealth necessary to maintain, unaided, a high position as a manufacturing and commercial community.

Before the United States adopted such measures as tended to build up and protect her manufacturing industries she stood high as a commercial nation, and her vessels entered every port. This was at a time when we depended largely upon foreign nations for ou manufactured goods.

It takes more than agriculture and commerce to make a prosperous and independent country.

When the people of the United States saw the necessity of protecting their manufacturing industries, and adopted that policy, these industries opened up to capital new avenues. It became more profitable than unaided commerce, and that, with the advent of railroads, which have been aided to a large extent by the General Government with grants of lands and money, have given employment to all the surplus capital, and so long as these investments are more profitable and more certain to the investor so long will unaided American shipping be neglected.

If the protective tariff has built up our manufactures so that we are able to compete with the world; if Government aid has assisted in building up the great system of railroads, of which every American is proud, why will not the same policy, if adopted, restore our commerce? Then, with our immense agricultural resources, manufacturing industries, and railways for transportation to the sea-board, we shall have everything that would tend to make the American nation great.

When the General Government extends the same aid to commerce which it has to other industries, capital will no longer seek an investment in other countries, but will be employed at home.

There are two ways in which American shipping can be restored: First, treat it as other nations do theirs. Let some of the surplus revenue of the country be used to subsidize steamship lines, and give them enough to enable them to compete with the vessels of other countries. When American lines are backed by the Government there will be no attempt to drive our vessels from the sea. This would be using the weapons now being employed against us. There is no reason why the United States cannot fight the battles of commerce as effectually as she has all her other engagements.

The other way (which would be only destroying on one hand to build up on the other) it can be restored to a limited extent is, let the protective duties that have built up the manufacturing industries be reduced so low that capital will no longer seek employment in them, open our market to the foreign manufacturers, and some of the then unemployed wealth of the country may be invested in ships and shipping.

Outside of agriculture, commerce and manufactures are the only avenues open to capital, and in those countries where the accumulation of wealth is limited, and before there is enough for all and to spare, that industry will be the most prosperous that returns the greatest per cent. of profit to the investor, and any legislation that tends to the building up of one of these industries alone will have a tendency to destroy the others.

J. G. CRAWFORD,
Consul.

UNITED STATES CONSULATE,
Coaticook, February 9, 1884.

SHIPPING INTERESTS OF PORT SARNIA.

REPORT BY CONSUL PACE.

When I first assumed the duties of consul at this port June 1, 1869, there was no registered vessel tonnage owned in Port Sarnia. About one year from the above date the schooner Admiral, a small trading vessel of 48 tons register, was built and owned by Capt. A. Frink an American who had long resided here. Since the Admiral was launched Port Sarnia has steadily advanced into notice as a shipping point, and to-day there is owned and registered at this port sail and steam craft, aggregating 5,560 tons, valued at $400,000. The Beattie line of steamers, which during the season of navigation, ply between Port Sarnia and Duluth, touching at intermediate Canadian lake ports on lakes Huron and Superior, comprise three screw and one paddle-wheel steamer. These vessels are staunch, seaworthy craft, well fitted with modern improvements for the safety and convenience of passengers. The United Empire, the last vessel added to the Beattie fleet, was built at this port during the past summer; she is of 900 tons register, and by marine men she is regarded as one of the finest wooden boats to be found on fresh water. She compares favorably in point of strength and general beauty of design with our best American lake steamers, and to admit this is to confer high praise upon the United Empire, for there is not to be found in any part of the world better modeled or better constructed vessels than our own lake steamers and schooners. Between the model of an ocean vessel and that of a lake craft a very great difference will be observed; the necessity for this difference will be found in the comparative shoalness of our lake harbors. A lake vessel of 900 tons, when loaded, will draw usually something less than 15 feet of water, whilst a ship of like tonnage designed especially for the ocean with her cargo on board, will draw at least 25 feet. From a mechanical point of view it will be readily seen that a vessel constructed with a deep hold is much stronger than a shoal vessel, and is therefore better prepared to resist the action of storms at sea. Greater care, then, is required on the part of our marine architects to give strength to our shoal vessels than would be required if the depth of our harbors and river channels would permit of deeper sides, and consequently greater depth of hold. The United Empire was designed and built under the immediate supervision of Mr. William Parry, who came from Michigan to this port especially for that purpose. Mr. Parry also made plans, models, and drawings for three iron steamers recently built in Scotland. Two of these vessels have reached Canada, coming by river and canals. These vessels being of a length greater than could be admitted to the locks of the Welland Canal, they were, upon reaching that thoroughfare, severed in two, and the divided sections having been furnished with temporary bulkheads, were towed through the canal to Buffalo, where they were placed in dry-dock, and again riveted together. From Buffalo they were taken to Port Colburn, Canada, where they are now receiving cabins and furniture preparatory to their engagement in the freight and passenger trafic of the lakes on the opening of navigation. The Messrs. Beattie being partial owners of this line they will also have their management, and they will run during the coming season in connection with portions of the Canada Pacific Railway on Lakes Huron and Superior. These steamers having not yet been measured their exact tonnage is therefore unknown.

It is claimed, however, that when their cabins are completed they will measure about 800 tons each. This, added to the tonnage already registered here, swells the tonnage of the port to about 9,000 tons, divided as follows: Steamers, 8,206 tons; sailing vessels, 894 tons. By this addition to the tonnage the value of vessels owned here will be increased to at least $750,000.

TAX ON AMERICAN VS. CANADIAN SHIPPING.

It is perhaps not generally known that upon this class of property in Canada no tax whatever is levied, either by the national or municipal authorities. In contrast to this Canadian policy of permitting ships to go untaxed, it may not be out of place to mention briefly the dues and taxes imposed by our own Government upon American vessels engaged in the lake trade. By way of comparison we will take an American schooner of 400 tons register, valued at, say, $20,000. The taxes and dues which she is required to pay to the custom-house and the State are about $425. On the Canadian schooner of equal tonnage and value not a dollar is exacted on account of dues or taxes. The season of navigation on the lakes is about eight months, commencing usually the first week in April and ending the first week in December following. Hence we see that the taxes charged up against the American schooner is $50 per month, or thereabouts, for the season of navigation. Should the vessel be required to engage in the foreign trade 30 cents per ton will be exacted for this, which on a vessel of 400 tons amounts to $120; this, added to the dues and taxes, which she must pay even though she remains entirely at home, swells the amount to $545. This sum our schooner must pay for the privilege of navigating (sometimes at a loss) these inland lakes and rivers for a period of eight months.

It may be claimed that vessel property should be taxed by the State in the same proportion as other personal property is taxed, but when it is shown that the General Government already taxes this property sufficient to satisfy all reasonable demands, the justness of this claim is not apparent.

In further presentation of the contrast in the matter of dues and taxes levied upon shipping by the Governments of the United States and Canada respectively, I will take for illustration two vessels, one American and one Canadian, of, say, 30,000 bushels capacity each. These vessels engage in the grain trade betwixt Chicago and Port Sarnia, or Chicago and Goderich. The number of round trips would be about twelve during the season. Thus it will be seen that the Canadian schooner in the outset would have an advantage of about $50 for each trip over the American schooner in the same trade. W ell may it be said, in view of these facts, that rocks and shoals, and storms and lee-shores are not the only obstacles to successful navigation on the great lakes.

CANADIAN WRECKING REGULATIONS.

In addition to other obstructions to our commerce, my report would be incomplete should I fail to mention once again the wrecking regulations of Canada. My duty to the interests of American commerce will not permit me to remain silent upon this subject even though unfavorable criticism should be awarded me as heretofore by portions of the Canadian press.

When misfortune overtakes our shipping in Canadian waters they are

still required to employ Canadian wrecking tugs, unless it can be shown to the satisfaction of the nearest customs collector that there are no Canadian wreckers in the vicinity, and that the vessel is in immediate danger of destruction. In that case the Canadian customs officer may grant a permit, or rather he may recommend that a permit be granted by the Department at Ottawa for American tugs to assist in the rescue. At first thought this ruling may seem reasonable, and I am frank to admit that it is quite a modification of former rulings upon this subject, but the point is right here, the time occupied in reporting to the collector that your vessel is stranded, and the further time spent in pleading for the privilege of releasing her, is in many instances precious time lost. Immediate aid may save the vessel, and one hour's delay may insure her loss.

Very frequently our tugs and towing steamers on their course through the lakes will have several sailing vessels or barges in tow, and frequently during the spring and autumn months these vessels are overtaken by violent gales in this condition. They often lose sails and spars, and otherwise become unmanageable by the parting of their tow-lines (by no means an uncommon occurrence). They drift helplessly with the wind and sea. By great care the steamer may bring her disabled fleet to a safe anchorage, but the chances are against so happy a termination of this struggle with the elements. In case the steamer has been so fortunate as to find shelter for a portion of her fleet, the captain naturally turns his attention to the other portion in need of assistance, and in prosecuting his search he finds one or more of them ashore on the Canada side of the lake, the natural promptings of humanity, to say nothing of monetary considerations, would induce him to give immediate aid to the stranded vessel or vessels; but right here he is met by the Canadian wrecking regulations, which compel him first to seek the nearest Canadian customs officer, and, if possible, obtain his recommendation that a permit be granted him to engage in the rescue. He telegraphs the authorities and awaits the reply. If the answer is favorable he again sets out in search of the disabled craft, but when he finds her he may also find that whilst he has been seeking permission to save valuable property from the ravages of the sea, the winds and waves have been carrying on their work of destruction, regardless of rulings, regulations, or law.

It is sometimes claimed by Canadians that our wrecking regulations are as arbitrary in their requirements upon Canadian tugs as are their rulings in reference to ours. I cannot speak authoritatively upon that point, as I cannot now recall an instance where Canadian steamers have sought permission to rescue Canadian vessels stranded in American waters. Instances of this kind are not frequent, from the fact that as compared to American vessels Canadian vessels engaged in the lake trade are not numerous, but, by way of reciprocity in the matter of wrecking, I would suggest that Canadian tugs shall be permitted to come freely to our waters, and that, without the preliminary of asking permission, they shall be at liberty to go immediately to the rescue of any Canadian vessel in distress. This should be granted as a matter of right, and the Dominion should extend the same privilege to us.

SAM'L D. PACE,
Consul.

UNITED STATES CONSULATE,
Port Sarnia, February 24, 1884.

TRADE AND NAVIGATION OF THE DOMINION OF CANADA.

BY CONSUL LANGE, OF SAINT STEPHEN, N. B.

Abstract from the official returns of the trade and navigation of the Dominion of Canada for the fiscal year ended June 30, 1883.

TRADE.

The volume of trade of Canada was, last year, the highest reached since the confederation. The value of the exports amounted to $98,085,804, and of the imports, to $132,254,022, making a grand aggregate of $230,339,826, and an increase over 1882 of $8,983,123. In 1868, the year of the confederation, the total exports were $57,567,888; the total imports, $73,459,644; grand total imports and exports, $131,037,522.

In 1883 the total exports were	$98,085,804
The total imports	132,254,022
Grand total imports and exports	230,329,826

This shows an increase for a period of fourteen years in the exports of Canada of about 72 per cent.; imports, 80 per cent., and in the grand total of trade, about 72 per cent. The amount of trade for the year 1883 with various countries is as follows:

United States	$97,701,056
Great Britain	99,197,682
France	2,834,200
Germany	1,942,851
Spain	749,897
Belgium	611,112
Newfoundland	2,952,273
West Indies	7,492,291
South America	2,954,628
China and Japan	1,750,642
Holland	334,800
Italy	322,554
Portugal	243,192
Switzerland	336,040
Other countries	1,706,595

Free goods were brought in and entered for consumption to the value of $31,548,680, being about one-third of the value of dutiable goods entered for home consumption.

The following are the principal of the heavier items of imports classed among dutiable goods:

Flour and meal	$1,793,715
Grain	1,272,345
Carriages	1,172,127
Coal and coke	6,389,804
Cotton manufactures	10,044,032
Glass, and manufactures of	1,176,912
Hats, caps, and bonnets	1,364,558
Iron and steel, manufactures of	13,714,636
Leather, and manufactures of	2,032,348
Paper, and manufactures of	1,287,800
Butter, cheese, lard, and meats	2,435,991
Silk, and manufactures of	2,916,038
Spirits and wines	1,753,368
Sugar, all kinds	5,091,530
Molasses	1,197,229
Wood, and manufactures of	2,197,452
Woolen manufactures	10,105,501

Of free goods the following are the imports and exports:

	Imports.	Exports.
Produce of mine	$709,336	$3,106,830
The fisheries	788,159	8,856,926
The forest	1,346,739	26,648,441
Animals and their produce	5,944,059	21,165,418
Agricultural products	1,975,140	29,515,033
Manufactured and partially manufactured articles	11,240,762	4,114,424

The United States and Great Britain are the two countries with which Canada trades most.

The duty collected from imports in 1883 amounted to the sum of $23,172,308.

The amount of customs duties per head of the population is $5.26.

The percentage expense of collection of duties is 3.26.

NAVIGATION.

The tonnage of vessels built, registered, and entered inwards and outwards, inclusive of coasting vessels in 1883, is as follows: Tonnage built, 73,576; tonnage registered, 78,229; tonnage entered inwards and outwards, 13,770,735. The quantity of freight handled by the last-named vessels was 3,971,393 tons weight, and number of crews 537,668.

Of these vessels which entered the Dominion ports 2,680 bore the United States flag and 7,305 the British flag; 635 were Norwegian and Swedish, 46 were French, and the remainder 10,781 were distributed among other nationalities. Number of sailing vessels 8,138, and of steamers 2,593.

The number of vessels employed in the coasting trade of Canada, as shown by the arrivals in port, is 38,244, of which 38,085 are British and 158 foreign.

The total tonnage is 8,056,736, and crews numbered 369,524. Of these vessels 17,782 were steamers and 20,462 sailing vessels.

Ships, old or new, sold to other countries numbered 44; tonnage, 23,896; value, $506,538.

PAUL LANGE,
Consul.

UNITED STATES CONSULATE,
Saint Stephen, February, 1884.

COMMERCE AND INDUSTRIES OF VANCOUVER.

REPORT BY CONSUL FRANCIS.

I have the honor inclosing herewith returns for the quarter ending December 31, 1883, embracing arrivals and departures of American vessels, declared exports, and summary of consular business.

American vessels.—There were one hundred and thirty-four arrivals and departures of American vessels; aggregate tonnage, 78,774.

Imports.—The value of imports by these arrivals amounted to $532,445.37, consisting of general merchandise, railroad materials, and produce, largely of the production of the United States.

Declared exports.—The value of declared exports during the quarter to the United States amounted to $493,710.34, leading articles being gold-dust, bullion, coal, salmon, and furs. Less reported exports than imports, $85,937.82, which has been more than balanced by shipments of salmon, lumber, wool, and oil to foreign markets.

ning.—Of the industries of the province, confined chiefly to coal gold mining, salmon canning, fur sealing, and lumber, that of coal w taking the lead and making marked progress. The four mines eration on Vancouver's Island are taking out daily for shipment een 1,500 and 2,000 tons, finding a ready market and increasing nd.

e price of coal at the mines has advanced from $3.50 to $4; gas $5, and freights to San Francisco from $2 to $2.50 per ton, the barely paying the expenses of sailing vessel consuming more than days of time.

am colliers, carrying from 1,500 to 2,500 tons, occupying from twelve een days, are fast supplanting sailing vessels in the trade, and the is to be increased the ensuing season.

THE CHINESE IN VANCOUVER.

ld mining in the province of late years has enlisted but little atten- Explorations and prospecting pursued year after year in remote ontiguous portions of the province have failed in discovering any gold fields. Old mining districts, with the exception of two or , have almost been abandoned by white miners to the Chinese, who eemingly content in taking out from "tailings" one or two dollars . Where it costs the white miner from $1 to $2 a day for subsist- the Chinaman will thrive on rice for less than 25 cents.

e Chinese merchants of this city, who have stores at nearly every ig camp, employ Chinese miners at nominal wages, and manage to e all their earnings if they remain during the winter months. In instances these merchants are known to import their countrymen conditions of service for one and two years, and they are either sent e mines or farmed out as servants and cooks on wages from $10 to er month, according to qualifications, in which capacity they are seding other kind of domestics.

Victoria it is estimated there are between 2,500 and 3,000 China- and in the province, in addition to the 6,000 or 7,000 engaged on anadian Pacific Railroad, 2,000 more—nearly equaling its number ite inhabitants.

e previous provincial legislature passed a restriction act similar to ne adopted by Australia, which was disallowed by the Dominion rnment. The present legislature, now in session, have before it ier bill, regarded as more oppressive and objectionable, designedly so by politicians, it is thought, in order to meet the same fate.

mon canning.—Salmon canning, an important interest of the prov- offering unlimited resources for extension, is attracting capitalists, everal additional establishments for the business are projected for oming season.

r-sealing.—Fur-sealing, a no less valuable industry to the province canning salmon, and giving employment to many hundred Indians coast, is enlisting increased capital. The season being now near nd, vessels are preparing to leave for the sealing grounds on the coast of the island, and there will be an addition of four or five to sual fleet.

ports from Canada.—The only new feature in commercial matters increased amount of goods arriving from Canada by way of the ern Pacific Railroad, experience so far proving that the cost is from 0 per cent. cheaper than any other route, and more expeditious. class of goods coming are nails, hardware, farming implements, e dry-goods, and a large quantity of sugar, bacon, and butter.

It is quite apparent that the trade with the eastern provinces is increasing under the facilities of transportation.

ALLEN FRANCIS,
Consul.

UNITED STATES CONSULATE,
Victoria, Vancouver's Island, January 24, 1884.

SHIP-BUILDING ON THE CLYDE.

REPORT BY CONSUL HARTE.

The returns of the Clyde ship-building trade for 1883 have just been published, and the figures show that the greatest activity has characterized the industry during the year. The various firms on the river have surpassed all their previous efforts, the figures showing an amount of new shipping largely in excess of that of any previous year.

Subjoined will be found tabulated statements showing the number, description, tonnage, and effective horse-power of steam vessels, list of sailing vessels, &c., launched during the year on the river Clyde:

Name of firm.	Steam vessels.	Sailing vessels.	Effective horse-power.	Gross tonnage.
John Elder & Co	13	.....	56, 995	40, 115
Russell & Co	9	19	.....	30, 610
R. Napier & Sons	6	.....	28, 200	23, 877
A. Stephen & Sons	11	.....	19, 160	23, 020
W. Penny Brothers	10	.....	23, 200	22, 240
London and Glasgow Company	9	.....	10, 120	19, 793
Scott & Co., Greenock	9	.....	11, 540	18, 685
D. & W. Henderson	8	9	10, 004	17, 740
Aiken & Mansel	8	.....	13, 720	16, 800
Duncan & Co	6	12	5, 215	16, 581
Barclay, Curle & Co	7	1	12, 210	15, 198
A. & J. Inglis	8	.....	11, 150	14, 741
J. & G. Thomson	6	.....	16, 260	13, 925
A. McMillan & Sons	3	5	5, 616	13, 124
Caird & Co	7	.....	13, 500	12, 382
Connell & Co	5	.....	9, 760	12, 001
Dobie & Co	9	1	6, 055	9, 186
Napier, Shanks & Bell	34	1	6, 780	9, 094
Blackwood & Gordon	8	1	7, 560	8, 900
W. B. Thompson	4	1	3, 425	8, 822
John Reid & Co	2	6	2, 500	6, 874
H. Murray & Co	6	.....	2, 850	6, 698
Lobnitz & Co	13	.....	6, 200	6, 662
Macintyre & Co	10	.....	5, 820	6, 537
Murdoch & Murray	8	.....	5, 120	6, 398
P. J. Dunlop & Co	7	.....	4, 800	6, 125
R. Steele & Co	4	2	3, 570	5, 820
Burrell & Sons	5	.....	2, 570	4, 430
Hamilton & Co	.....	4	.....	3, 924
Simons & Co	6	.....	2, 980	3, 344
Macarthur & Co	12	3	2, 430	2, 616
Burrell & Stenhouse	1	1	800	2, 520
Leath & Co	7	3	1, 405	1, 615
Fullarton & Co	7	.....	1, 095	2, 211
Campbeltown Company	4	.....	1, 120	1, 826
Hanna, Donald & Wilson	.....	5	.....	875
Scott & Co., Bowling	3	.....	720	855
Murray Brothers	3	.....	300	430
Troon Company	.....	2	.....	379
Swan & Co	.....	3	.....	285
McCreadie & McKnight	1	1	200	236
W. S. Cumming	2	2	120	180
W. Fyfe	.....	2	.....	187
J. Macadam	1	.....	10	10
Total	251	88	315, 110	417, 881
Total increase of tonnage on the year	.....	.....	.....	22, 732
Total increase in horse-power of engines on the year	.....	.....	.....	52, 791

It will thus be seen that there were launched during the year by the various firms engaged in ship-building on the Clyde 339 vessels, of an aggregate tonnage of 417,881 tons.

The exact bearing of the returns will, however, be seen by reference to the following table, which gives the amount of tonnage launched during each of the last twenty-six years:

	Tons.		Tons.
1858	22,000	1871	196,000
1859	35,707	1872	230,340
1860	47,833	1873	232,926
1861	66,801	1874	262,430
1862	69,987	1875	211,800
1863	123,262	1876	174,824
1864	178,505	1877	169,710
1865	153,932	1878	215,640
1866	124,513	1879	173,820
1867	108,024	1880	242,774
1868	169,571	1881	340,823
1869	192,310	1882	395,149
1870	180,030	1883	417,881

The majority of the new vessels were built of iron, but a considerable number were constructed of steel, and every year furnishes evidence of the growing favor of steel as a ship-building material.

In 1879 the steel-built vessels amounted to 18,000 tons; in 1880 they aggregated 42,000 tons; in 1881 they rose to 66,609 tons; while last year they reached 108,254 tons. During the present year these figures have been surpassed, the steel-built vessels reaching a total of 129,651 tons.

It is estimated that the earnings of the 52,000 artisans engaged directly and indirectly during the year amounted to between £5,000,000 and £6,000,000, while the sum paid by ship-owners to the builders for new vessels launched during the year cannot be less than £10,000,000, or an increase over last year of at least £1,000,000.

It is to be noted, however, that notwithstanding the magnitude of the trade done during the year, the present outlook of the industry is not by any means bright. During the past two or three months nearly all the ship-builders have had to curtail their establishments, and it is estimated that since July no fewer than 5,000 men have been discharged. The tonnage under contract is far short of what it was at the close of 1882, and some firms show empty ships. The vessels on the stocks at present do not certainly number more than 100, of all classes, showing tonnage of about 200,000, or fully 80,000 less than was the case at this time last year. The largest contract on hand at present is being executed by Messrs. John Elder & Co., for the Cunard line, who have ordered two extraordinary vessels, with a united tonnage of about 16,000.

I am further informed that contracts can now be made at from 20*s.* to 30*s.* per ton below the prices ruling two or three months ago, and even at that large reduction orders are not coming in.

The iron workers in nearly all the yards have accepted a reduction of 10 per cent. on their wages, and shipwrights, blacksmiths, engineers, ship-joiners, and laborers have accepted a reduction of from 5 to 7 per cent.

BRET HARTE,
Consul.

UNITED STATES CONSULATE,
Glasgow, January 7, 1884.

THE FRUIT TRADE OF NEW ZEALAND.

REPORT BY CONSUL GRIFFIN, OF AUCKLAND.

Although there are few countries in the world better adapted to the growth of the various kinds of fruits common to temperate zones than New Zealand, nevertheless the colony is dependent on foreign markets for the bulk of its fruit supply. The value of the various kinds of fruits imported into New Zealand during the year 1882 was $599,275 against $651,615 for 1881. The value of the same imports for the year 1880 was $544,250. The imports for 1882, while less than those of 1881, are larger than those of 1880. The decline consisted principally in the quantity of dried currants imported. The indications are, however, that the fruit imports for 1883 will be larger than those of any previous year.

The value of the imports of American canned fruits during 1882 was $8,855 against $4,440 for 1881, showing an increase of $4,415 for 1882. The value of the imports of dried fruit, exclusive of currants, raisins, and figs, for 1882, was $41,400 against $30,070 for 1881. The value of the imports of dried currants for 1882 was $100,345 against $166,770 for 1881. The imports of raisins for 1882 amounted to $111,025 against $98,175 for 1881. The value of the imports of fresh fruits for 1882 was $322,700.

THE POPULARITY OF AMERICAN CANNED FRUIT.

This fruit comes principally from the colonies of Victoria, New South Wales, and Tasmania, and from the Pacific slope of the United States. The canned fruit put up in New Zealand is usually very good, and is sold at a low price, but it is nothing like as popular with the consumer as that brought from the United States. It is well known throughout Australasia that the tins manufactured for the American canners are all thoroughly tested by the most improved method known to science before the fruit is put into them. It is also well known that the machinery used in making the cans requires that they shall be soldered on the outside so that the fruit cannot possibly be injured by coming in contact with the small particles of lead in the solder. Indeed all the principal difficulties in the way of preserving fruit have been overcome by the American canners. Sometimes when fruit is put up carelessly by farmers or unskilled persons it does not turn out well, but such goods have never found their way to this market, and it can be safely said that everyone using American canned fruits has the utmost confidence in them. All the leading grocers in the principal cities and towns of New Zealand are well supplied with these goods. Pears and peaches have perhaps a quicker sale than apricots, strawberries, plums, and cherries, but there is a steady demand for all kinds of American canned fruit. Amongst the best known brands are those of the Cutting Packing Company, of San Francisco; H. K. & F. B. Thurber & Co., New York; Krach & Co., Baltimore; A. Lusk & Co., W. T. Colman & Co., Wilkins & Co., Shrewich, Gray & Co., San Francisco.

The value of American canned fruits imported into New Zealand in 1873 was only $395. In 1877 the amount was $3,900; in 1881 it was $4,240; but in 1882 it swelled to $8,555, showing, as I have said previously, an increase of $4,315 over the former year.

The recent paper of General Hawkins, commissary of subsistence, United States Army, on the subject of canning fruits in their natural state, has attracted much attention here. The fruits referred to are especially desired for the use of ships on long voyages and for laborers in the mining districts, or wherever an anti-scorbutic food is required. They are known by the name of "pie fruits," and on account of their low price are very popular wherever they have been introduced. The reason of their low price is that the process of preparing them for the market is a very simple one, and instead of the expensive ingredient of sugar being used, the fruits are preserved in their own juices. General Hawkins recommends that canners should give this fruit a more appropriate name, and one that would better designate its character and usefulness. The name "pie fruit" was probably given to it from the fact that it was principally used by bakers and hotel-keepers in the manufacture of pies and tarts. It is certain that it has more of the flavor and aroma of fresh fruit than that prepared with sugar. The reason for this, General Hawkins states, is that fruit processed in its own juice is modified in taste only by the heat it is subjected to, and this is less in degree than when combined with sugar, and the time required for the process is less. He says:

> The general rule being that about twelve minutes is required to process the natural fruit, while, if sirup is used, one minute on an average is allowed for each degree of sirup, so that with a sirup of 35° the time of processing would be 35 minutes.

The pie-peaches put up by the Cutting Packing Company of San Francisco find a ready market in all the Australasian colonies, with the exception, perhaps, of Tasmania. They come usually in one-gallon tins, and the wholesale price is about $7.50 per one dozen tins. Messrs. F. Compton & Co., of Queen street, Auckland, large dealers in American canned fruits, are of the opinion that the progress made in the art of canning fruit here, and the low price at which it can be obtained, will soon operate materially against the sale of American fruit, unless better rates can be secured in the cost of freight and other incidental expenses connected with the shipment of goods from San Francisco to Auckland. The duty charged on canned fruit imported into New Zealand is 15 per cent. ad valorem, and on preserves 1½*d.* (3 cents) per pound.

DRIED FRUIT.

The duty charged on dried fruit imported into New Zealand is 2*d.* (4 cents) per pound. It is very generally admitted throughout the colonies that dried fruit can be prepared much cheaper and better in the United States than anywhere else. The high price of labor, and the absence of the necessary apparatus are obstacles in the way of the fruit-drying industry in New Zealand. The farmers, however, would find it greatly to their advantage to employ some of the American fruit-evaporating machines, such as the famous Plummer Fruit Evaporator, now so extensively used in California and Oregon. By this process the natural flavor, extract, and alcohol of the fruit, are preserved and the juices concentrated, the moisture only being driven off. Moreover, no skilled labor is required. Any boy of fifteen years of age could master the art of operating one of these machines in a few days. American dried pears, peaches, and apples command a much better price than any other, and it is said that exporters have reached absolute perfection in packing them. The retail price of dried apples in Auckland varies from 6½*d.* (13 cents) to 7½*d* (15 cents) per pound. Those put up

either by the Alden or the Plummer process retail from 8*d.* (16 cents) to 9*d.* (18 cents) per pound. The price of dried peaches ranges from 6½*d.* (13 cents) to 10*d.* (20 cents) per pound according to quality.

The value of dried fruits imported into New Zealand during the year 1873 was $34,555. In 1878 it was $43,940. In 1881 it was $30,008, and in 1882 the amount increased to $41,400. The subjoined table shows the quantity and value of dried fruit imported into New Zealand for each year since 1873.

Table showing the quantity and value of dried fruit imported into New Zealand for each year from 1873 to 1882, inclusive.

Year.	Quantity.	Value.
	Cwt.	
1873	2,651	$34,555
1874	2,868	31,555
1875	4,019	52,070
1876	4,412	66,735
1877	3,232	46,080
1878	3,172	43,940
1879	3,760	43,995
1880	4,630	47,980
1881	2,717	30,008
1882	3,130	41,400

FRUIT CULTURE IN NEW ZEALAND.

The cultivation of fruit in New Zealand, and especially of apples and peaches, is becoming a very important industry. The farmers and nurserymen are planting apple trees all over the North Island. There are also a number of apple-farm companies in the district of Auckland conducting the business on a large scale. Both climate and soil are favorable to the cultivation of this fruit. As to soil, apples seem to do well on all sorts—alluvial, volcanic, sandy, loam, and on clay soil. The trees grow on the tops and sides of hills, in valleys, and even in swamps. I have seen them flourish on heavy limestone land, where the lime was cropping out at the top, and I have seen them do almost as well where the soil was light and sandy. Poor clay land, that would only produce stunted fern and ti-tree, has been made to grow splendid apples; so has semi-volcanic land, in which forests had been situated. The Northern Spy, the Winter Magetin, the New York Pippin, the Newton Pippin, the Ribston Pippin, the *Ohinemuri* and the *Takapuna* Russett all thrive as well here as in their native homes. The last two apples are Maori or native names for two superb varieties of fruit, the scientific or true names of which are not yet known in New Zealand. The *Takapuna* Russett is a large, magnificent apple and a long keeper. The *Ohinemuri* is the finest apple grown in New Zealand, and in appearance is something like the celebrated Beauty of Kent, only it is jucier and of a much finer flavor. It is, however, not necessary to dwell further on this subject, for there is no other country in the southern hemisphere better adapted to the growth of the finest varieties of apples than New Zealand. The New Zealand pears, peaches, quinces, apricots, and plums are also superb, and the strawberries and melons are amongst the largest and best flavored in the world. Semi-tropical fruits also thrive well here. The figs are unsurpassed in richness and flavor, and the oranges and lemons grown in the northern part of the North Island are quite equal to those of Florida and Cuba. The same districts also produce the choicest va-

s of the citron and olive. I am indebted to my friend, Mr. Thomas eys, of Auckland, a gentleman who has given much study to the ıcts of the colony, for the subjoined table of the various kinds of trees that thrive well in New Zealand. The table is arranged in ·der of their ripening. The letter D signifies desert, and K signi- itchen.

able showing the various kinds of fruit-trees in New Zealand, ar- d in the order of their ripening:

FORTY BEST APPLES.

;tiug (D.).	Dumelow's Seedling (K.).
each (D.).	Brabant Bellefleur (K., D.).
shire Quarrenden (D.).	Prince Bismarck (K., D.).
ns' Favorite (K.).	Alfristan (K.).
se of Oldenburg (K.).	Reinette de Canada (K., D.).
f the Pippins (D.).	Adam's Pearmain (D.).
uffield (K.).	Ribston Pippin (D.).
ıstein (K., D.).	Newton Pippin (D.).
i (K., D.).	Stone Pippin (K.).
or Alexander (K.).	Northern Spy (D.).
:an Golden Russet (D.).	Boston Russet (D.).
)range Pippin (D.).	Scarlet Nonpareil (D.).
ıornden (K.).	Shepherd's Perfection (D.).
of Wick (D.).	Winter Pearmain (K.).
ıte's Pearmain (D.).	Winter Majetin (K.).
; of Kent (K.).	Norfolk Biffins (K.).
im Pippin, (K., D.)	Sturmer Pippin (D.).

SIX NECTARINES.

's Tawney.	1 Roman.
r's Orange.	1 Balgowan.
rt Victor.	

EIGHTEEN PEACHES.

; River's.	1 Miller's Mignonne.
; York.	1 Crimson Galande.
ıar.	1 Comet.
ındra Noblesse.	1 Lord Palmerston.
1 George.	1 Salwey.
ıe Mignonne.	2 Hobb's Late.
esse.	1 Shap's Late.

TWENTY-TWO BEST PEARS.

n des Carmes.	2 Beurre Diel.
ınelle.	1 Marie Louise.
am's Bon Chretien.	2 Napoleon.
ish Beauty.	1 Passe Colmar,
re de Capianmont.	2 Winter Nelis.
n Beurre.	1 Chaumontelle.
ı Bonne of Jersey.	1 Nec Plus Meurris.
el's Bergamot.	1 Uvedale's St. Germain.

TWENTY SELECT PLUMS.

; River's	1 Jefferson's.
Greengage.	1 Kirke's.
; Orleans.	1 Washington.
iston's Superb.	1 Denyer's Victoria.
ın Esperen.	1 Pond's Seedling.
lina Burdet.	1 Prince Englebert.
ıgage.	1 Diamond.
ıon Prune.	1 Coe's Golden Drop.
ston's Black.	1 White Magnum Bonum.
ı Claude De Barray.	

SIX FIGS.

1 Brown Ischia.
1 Green Ischia.
2 Brown Turkey.
1 White Marseilles.
1 Malta.

THREE APRICOTS.

1 Hemskerk.
1 Moorpark.
1 Peach.

SIX QUINCES.

2 Apple-shaped.
2 Pear-shaped.
2 Portugal.

THREE BLACK MULBERRIES.

SIX LISBON LEMONS.

TWO LOQUATS.

ONE ALMOND PAPERSHELL.

ONE ALMOND JORDAN.

FRUIT CROP OF CALIFORNIA.

Fruit growing, however, in New Zealand is comparatively a new industry, and some time will elapse before the colony will be able to supply the home market with fruit, much less think of producing it in sufficient quantities for export, and even then the industry will not interfere materially with the fruit trade between America and the colonies. The colonies being south of the equator, the seasons are directly opposite to those of the United States, so that when fruit is out of season here it is most abundant in America, and especially in California and the adjacent States. The fruits most desired in New Zealand, such as apricots, peaches, pears, plums, figs, prunes, and grapes, can be raised always in vast quantities and with certainty in California, and, besides, there are very few months in the year when fruit is not plentiful there.

During the year 1882 the fruit crop of that State was something enormous. There are seven large fruit-canning establishments in San Francisco, and one of these alone, the San José Fruit-Preserving Company, put up last year 3,700,000 pounds of fruit, and that firm's estimate for this season's canning is 7,400,000 pounds. The dried fruit product of California is also very large. During the year 1882 the State produced 800,000 pounds of dried peaches, 1,000,000 pounds of dried apples, 500,000 pounds of prunes, 100,000 pounds of dried pears, and 200,000 pounds of dried apricots. The sales for dried fruit, raisins, &c., during the same year amounted to $2,000,000. The average prices were, raisins, $2 per box; peaches, 7½ cents per pound; pears, 7 cents per pound. The export trade of these fruits was fully 20 per cent. larger than that of the previous year.

NEW ZEALAND GRAPES AND GRAPE TRADE.

There is one kind of fruit that does not grow well in New Zealand, in spite of everything said to the contrary, and that is the grape. It is true enough that grapes are often grown to perfection under glass in many parts of the colony, but they do not grow well in the open air. All the vineyards planted here within the last ten years have resulted in either partial or total failures. In certain localities, I will admit, the vine has been cultivated successfully in the open air; but it was under exceptional circumstances and in favorable or sheltered situations. The vine requires heat in the summer to ripen the fruit, and cold in the

winter to ripen the wood; but unfortunately the New Zealand climate is without these characteristics, and, moreover, it is so moist or humid that it promotes too much activity in the growth of the vine in the winter, and in the summer the fruit is almost certain, during the process of ripening, to become mildewed. The rain-fall is perhaps not too heavy to interfere with the growth of the grape; but it rains on too many days in the year. The chief obstacle, however, in the way of vine culture in New Zealand is the absence of the extremes of heat and cold. The result is that nearly all the grapes found in the market are either imported or grown under the glass. Under these circumstances, it is not surprising that this delicious fruit always commands a high price in New Zealand.

During the months of April, May, June, July, August, September, October, November, and December grapes could be exported profitably to this colony. The price of grapes in Auckland during these months ranges from 2*s*. (48 cents) to 4*s*. (96 cents) per pound. Of course in the shipment of grapes from California to New Zealand much care should be taken in packing them, as they have to stand a voyage through the tropics; and even when shipped in the vessels of the Pacific Mail Steamship Company it takes about twenty-one days to make the transit between San Francisco and Auckland, and about seven days longer for transshipment to Dunedin and Invercargill.

The grapes brought here from Australia are generally packed carelessly in casks, and on opening them are seldom found in good condition. The usual method of packing them there is to pile the fruit 2 or 3 inches above the level of the top of the cask, and then force it down by pressure. Grapes should be packed in boxes especially made for them The fruit should also be dry and cool before put into the boxes, and great care should be taken that the sawdust or shavings used in packing them should be thoroughly dry and clean. The only shipment of grapes made to Auckland from San Francisco since I have been consul here occurred during the month of October, 1881. It did not turn out well, and no attempt was made to follow it up by a subsequent shipment. Mr. H. Major, to whom the fruit was consigned, attributed the failure to the fact that the boxes were not kept in a cool place while on board the ship. I was present upon opening one of the boxes, and formed the opinion from the color and peculiar odor of the sawdust in which the grapes were packed that it was damp or otherwise spoiled before being put into the box.

IMPORTS OF FRESH OR GREEN FRUIT.

The customs authorities here designate fresh fruit as green fruit, not because it is unripe, but that it may be distinguished from dried, canned, or preserved fruit. The quantity of fresh fruit imported annually into New Zealand appears to be steadily increasing, and I am glad to say that it is admitted free of duty. In 1873 the value of these imports was only $123,240, and at that time much less attention was paid to fruit culture in the colony than at present. In 1877 the value of the same imports was $222,248. In 1882 the amount increased to $322,700. The following table shows the quantity and value of fresh fruit imported into New Zealand since 1873:

Table showing the quantity and value of fresh fruit imported into the colony of New Zealand for each year from 1873 to 1882.

Year.	Quantity.	Value.
1873	721 cases, 50,619 packages	$123,240
1874	9,212 cases, 57,053 packages	155,700
1875	310 cases, 80,563 packages	189,220
1876	1,740 cases, 59,560 packages	161,305
1877	90,174 packages	222,245
1878	103,600 packages	245,055
1879	260,988 packages	337,225
1880	128,756 packages	303,940
1881	143,884 packages	354,855
1882	122,633 packages	322,700

The oranges and lemons not grown in New Zealand are brought principally from New South Wales, Tasmania, and Fiji. The pineapples come from Fiji and other Pacific islands. The price of oranges in the months of October and November is from 7*s.* 6*d.* ($1.76) to 9*s.* 6*d.* ($2.28) per case; mandarins, 8*s.* 6*d.* ($1.96) to 11*s.* 6*d.* ($2.76) per case; pineapples, 8*s.* ($1.92) to 10*s.* ($2.40) per dozen; bananas, from 2*d.* (4 cents) to 6*d.* (12 cents) per pound. The Tasmanian shipments of apples begin to arrive in April, and end about the 1st of November. They are not packed in paper like the American ones, and do not look as well nor keep as well. The American apples most liked in Europe are the Newton Pippin, the Northern Spy, the Baldwin, and Roxbury Russett. The Baldwin is regarded as the most profitable to grow in America, either for table or market. The tree is vigorous, and an early and abundant bearer. Some idea of the value of this fruit can be formed from the statement of the American Agriculturist that a New York firm shipped to Europe in one year over 40,000 barrels of Baldwin apples.

The Pacific mail steamer City of New York brought to Auckland from San Francisco on the 16th of October last 1,525 cases of apples and 400 boxes of pears. Each of these cases contained about 50 pounds of fruit, and every apple and pear was wrapped in a separate paper. I noticed on opening them that there was a great difference in the quality of paper used, and that the fruit which kept the best was wrapped in the thinnest and best paper. The freight on this cargo cost 40 cents per cubic foot. The apples sold readily at retail from 6*d.* (12 cents) to 8*d.* (16 cents) per pound, and the pears brought 1*s.* (24 cents) per pound. The price of fruit in Auckland is said to be fixed by a syndicate, but whether it is or not, it is certain that no dealer will undersell another, and that some of them will allow the fruit to rot on their hands rather than take a penny less than the fixed rate per pound. The early fruit does not keep as well as that arriving later in the season. The best keeping apples, however, found in this market are grown in the State of Oregon, and the are also they firmest, juciest, and best flavored. So much pains is taken in packing and shipping them that, upon their arrival here, they do not seem to have lost a particle of their freshness and bloom.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Auckland, N. Z., October 28, 1883.

IMPORTATIONS OF ALCOHOL AT BARCELONA.

REPORT BY CONSUL SCHEUCH.

In the following article I beg to draw the attention of our alcohol distillers and merchants to the important trade done in Spain, and especially in Catalonia, in $\frac{3}{6}$ or potato spirit, used principally for fortifying wines and the manufacture of liqueurs, and at the same time to point out the difficulties and drawbacks which our manufacturers have to overcome. To give an idea of the immense quantities imported into the "Kingdom of Spain" during the last few years I give the following figures ("*only*" the imports at the port of Barcelona), which are perfectly reliable, having been especially extracted from the Barcelona custom-house records:

IMPORTATIONS.

Years.	From the United States.	From Germany.	From other countries.
	Liters.	*Liters.*	*Liters.*
1880	445,155	7,505,015	1,831,360
1881	49,758	8,261,411	1,915,980
1882	116,617	12,451,456	724,779
1883 (first semester)	50,684	5,142,566	1,128,223
Total	661,714	33,360,448	5,600,342

Showing that whilst Germany and other European countries have exported to Barcelona alone 38,960,790 liters, the United States have only been able to ship 661,714 liters. This certainly seems absurdly small, considering our vast resources. One of the great drawbacks is that our manufacturers have never given thorough satisfaction in the quality. Our shippers, as I understand, have always sent grain spirit, the smell of which is too sharp and decided, retaining always a heavy smell of the first material (and therefore unfit for "cutting" finer grades of wine). This, I think, might be obviated by more care being taken in the distilling (I am entirely ignorant of the process), and perhaps an extra rectifying being given; although it would facilitate matters much more by simply exporting the spirit made from potatoes, as the German, Austrian, and Belgian houses. Again, all these firms export this spirit to Spain, guaranteeing 38 to 39 grades "cartier;" whilst our manufacturers send a grade corresponding to 36 to 38, naturally the latter is a disadvantage to the Spanish buyer.

The casks shipped by the European houses are invariably either hogsheads of about from 600 to 660 liters; at the same time I should suggest good oak wine-pipes of say 516 to 518 imperial gallons each.

The duty is also against our American merchants, as European favored nations pay 21.10 pesetas, while America would have to pay 23.75 pesetas the 100 liters. However, taking everything into consideration, I think it is well worth our manufacturers' serious consideration, and the question ought to be immediately looked into. About eighteen months ago a distillery opened here, which is turning out about 200 to 225 casks per month, almost entirely made from grain, and is sold through Catalonia; however, it has not given the same satisfaction as potato spirit

How true it is I know not, but I understand from rather reliable parties that a great part of our maize spirit, shipped to some of the northern German ports, enters largely into German potato spirit, and is then shipped as the veritable potato spirit to foreign countries, especially Spain. If so, why can our distillers and merchants not fill foreign wants with the genuine article?

Very respectfully,

FRED'K H. SCHEUCH,
Consul.

UNITED STATES CONSULATE,
Barcelona, December 20, 1883.

Statement showing the importation of alcohol at the port of Barcelona.

YEAR 1880.

Months.	From the United States.	From Germany.	From other countries.
	Liters.	*Liters.*	*Liters.*
January		358,275	155,004
February		650,909	165,324
March		882,063	241,036
April		919,266	47,269
May	74,520	673,011	241,060
June	205,725	626,705	270,567
July		368,325	85,489
August	58,941	253,489	97,812
September	105,969	354,327	9,215
October		359,088	180,592
November		662,540	236,949
December		1,397,017	101,043
Total	445,155	7,505,015	1,831,360

YEAR 1881.

January		1,185,986	101,640
February		1,422,536	22,763
March		809,824	88,240
April		788,356	30,853
May		442,593	100,074
June		429,692	340,290
July		172,033	360,603
August		652,210	112,856
September	49,258	604,775	409,884
October		689,280	263,182
November		974,483	52,963
December		89,643	32,612
Total	49,258	8,261,411	1,915,960

YEAR 1882.

January		1,371,846	33,514
February	78,664	1,517,361	6,402
March	17,217	1,296,263	14,726
April	18,036	1,196,782	3,425
May		1,080,025	3,063
June		483,568	5,882
July		620,290	5,357
August		1,027,446	159,208
September		786,322	74,462
October	2,700	925,786	45,720
November		888,892	188,143
December		1,256,875	184,857
Total	116,617	12,451,456	724,779

Statement showing the importation of alcohol at the port of Barcelona—Continued.

FIRST SEMESTER 1883.

Months.	From the United States.	From Germany.	From other countries.
	Liters.	*Liters.*	*Liters.*
January		1,546,893	75,446
February		733,960	98,089
March		1,051,601	82,488
April		1,072,702	99,553
May		71,197	93,964
June	50,684	666,213	678,643
Total	50,684	5,142,566	1,128,223

Statement showing the importations of grain at the port of Barcelona.

YEAR 1880.

Months.	Wheat from—		Maize from—	
	United States.	Other countries.	United States.	Other countries.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
January	1,298,562	1,167,781	5,100	740,980
February	447,141	2,845,815	330,330	14,850
March	1,453,100	3,358,833	272,516	138,260
April	1,878,433	743,295	1,607,743	88,260
May	1,617,025		928,688	21,405
June				75,808
July	1,350	610,544	1,220,825	367,396
August		806,356	1,659,560	649,533
September		27,250	82,261	89,684
October		73,800	77,204	133,404
November		1,062,260		32,494
December		504,578		579,090
Total	8,690,611	11,200,512	5,584,227	2,881,164

YEAR 1881.

January		796,317	203,472	34,990
February			436,100	
March				7,427
April		525,568		6,435
May				9,900
June		145,340		19,008
July		778,019		237,954
August		1,340,282	536,250	251,181
September	197,887	592,889		106,946
October	625,883	142,953	474,884	519,051
November	485,215	735,627		150,275
December				
Total	1,308,985	5,056,995	1,650,706	1,343,116

YEAR 1882.

January		2,338,570		25,300
February	166,764	1,178,746		124,639
March		2,669,616		402,770
April	1,995,614	4,525,189	749,759	971,635
May	998,087	2,983,255	424	841,292
June	2,197,203	10,110,678		2,083,887
July	1,265,427	6,385,164	1,446,288	1,358,371
August	4,581,906	7,400,370	178,569	1,423,330
September	599,579	9,524,563	383,114	834,756
October	3,785,375	14,691,735	12,800	1,926,583
November	6,200,535	5,779,907	817,961	5,681,775
December	7,566,738	5,379,970	671,671	2,735,117
Total	29,357,228	72,967,763	4,260,586	18,409,455

Statement showing the importations of grain at the port of Barcelona—Continued.

FIRST SEMESTER, 1883.

Months.	Wheat from—		Maize from—	
	United States.	Other countries.	United States.	Other countries.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
January	3,709,179	12,126,204	.....	857,949
February	1,630,640	12,762,299	12,331	2,851,251
March	5,028,071	9,183,539	.....	2,058,479
April	1,525,654	4,219,942	889,544	1,103,964
May	926,525	10,813,437	.....	4,643,304
June	2,313,372	5,252,635	509,131	567,918
Total	15,133,441	54,357,156	1,411,006	12,082,865

CHANGES IN THE COLOMBIAN CUSTOMS TARIFF.

REPORT BY CONSUL DAWSON, OF BARRANQUILLA.

I have the honor to transmit herewith a recent decree of the Colombian Government imposing duties on almost everything imported from the United States, except lumber.

THOMAS M. DAWSON,
Consul.

UNITED STATES CONSULATE,
Barranquilla, December 29, 1883.

CHANGES IN THE CUSTOMS TARIFF.

[From the Shipping List.]

We hasten to lay before our readers the following important changes in the present tariff, by decree 1067, of December 3, of the present year. Space forbids comment in this number of our journal, but there are several points which need a little "touching up," which we hope to do in our next.

DECREE.

ARTICLE 1. With the exceptions established in par. 3 of this article, customs duties will be collected from the day that the "Diario Oficial" containing this decree is received, at the rates of 2½ cents, and 1 cent per kilogram. [These articles were formerly *free.*]

PAR. 1. Which pays 2½ cents:

Iron wire for fences, its fastenings and such posts and pieces as may be necessary to adjust and stretch it; unmanufactured iron; zinc in sheets; clocks for the public use of districts; pamphlets and printed books of whatever class; labels or advertisements and notices, even though framed; machines, the weight of which exceeds one thousand kilograms; machines for agricultural and mining purposes, without respect to weight; sewing machines and their accessories, such as plaiters, &c.; machines for cleaning coffee, and their several parts introduced as a whole or by piece; galvanized wire netting for stoves, iron tubes, fans, ventilators, iron roofing, and in general all articles and tools introduced for the same object; legal gold coin of a standard not inferior to that emitted by the Government; yeast of barley or of other grain, fermented or unfermented, liquid or solid, for making beer or condensed beer; motors of whatever kind and power, and machines for manufacturing or mining purposes; silver in bars and legal silver coin of the standard of 900-1000ths; lingets of lead, and quicksilver intended for mining purposes; potash or caustic soda, the ashes and salts of soda, pine rosin; printing presses, materials and implements for printing offices, binderies and lithographic establishments, comprising ink, white paper, and card-

board used in those industries; sub-carbonate of potash; subcarbonate of soda; uniforms for the corps of night-watch of Bogota and for the chiefs and officers of the Colombian guard in active service; utensils and apparatus for establishing, improving, and maintaining public lighting.

PAR. 2. All articles not comprised in the foregoing list, or excepted by par. 3, will carry a duty of 1 cent per kilogram.

PAR. 3. The following articles are free: Effects introduced by the General Government; baggage of diplomatic officers; natural productions of Ecuador, Venezuela, and Peru; articles excepted by former contract stipulations of the Government; arms and munitions for States; lumber, timber, sleepers, &c.; tiles, slates, shingles (with the exception of galvanized iron and zinc in sheets, for roofing, which will pay 1 cent per kilogram), materials for construction, as stone, brick, &c., and materials for the San Buenaventura Road Company, &c.

NOTE BY DEPARTMENT.

Increase of duties in Colombia.—Consul Dawson, under date of February 6, 1884, further reports a decree of the Government of Colombia, increasing the duty 25 per cent. on all imports of the fifth class:

DECREE.

ARTICLE 1. All merchandise comprised in the fifth class of the tariff will pay, in addition to the present duties, an augmentation of 25 per cent., of which article 4 of Law No. 40, of 1880, treats; and in consequence will be graded at 75 cents per kilogram.

ARTICLE 2. Merchandise comprised in article 5 of Law No. 40 will remain with the duties actually in force.

ARTICLE 3. For the liquidation, application, and collection of this augmentation, dispositions of articles 2 and 3 of Decree No. 1067, of the present month will be observed.

BOGOTA, *December* 19, 1883.

According to the tariff schedule of Columbia, as published in Consular Report No. 28, the fifth class, mentioned in the foregoing decree, reads as follows:

FIFTH CLASS.

1. Arms and munitions of war, fine flax cloths, like white or striped jeans, long lawns, &c., as well as "guingas" imitating linen or cotton cloths of a similar width.
2. Spirits, like brandy, cognac, rum, gin, whisky, &c.
3. All articles not excepted in the preceding articles, and those not mentioned as belonging to them.

AMERICAN VESSELS AT CORUNNA.

REPORT BY CONSUL CARRICARTE.

It has happened in cases, more or less frequent, that the receivers of cargoes of petroleum or wood coming from the United States ports have delayed the ships in the discharge more days than were absolutely necessary, without paying the slightest regard to the just complaints of the captains, and without reimbursing them in any way for demurrage in the delay occasioned. To avoid this prejudice I give as my advice to American owners and captains who decide in chartering their ships for Corunna, to stipulate in the charter-party a certain number of days for the discharge, and not to accept the condition "according to the custom of the port," which is generally placed in the charters, as that is too ambiguous to sustain the legal rights of the captain thus prejudiced by the delay.

The means at the disposal of the port are sufficient to enable ships to discharge quickly. I therefore think it more prudent to mention a num-

ber of days in the charter-party, viz: 3,000 cases of petroleum or 40,000 feet of timber to be discharged daily than run the risk of the delay occasioned by the receiver of the cargo, who in this case discharges the vessel at his convenience. Forced consignment of the ship to the receivers of the cargo does not in practice give the best results.

The port dues (descarga and obras de puerto) consists in 5.62 pesetas per ton of 1,000 kilograms ($1.12½), for the discharge, and 1 peseta, being 20 cents, per ton of 1,000 kilograms for the loading. These and other expenses pertaining to a ship in this port are mentioned in the *pro formas* of accounts, and which for guidance I copy at foot.

Freights to take pitwood hence to the English Bristol Channel coal ports can always be obtained, and the rate varies from 8*s.* 6*d.* to 10*s.* sterling per ton of 2,240 pounds. Ballast costs 35 cents per ton.

Account of expenses of the American brig N N, 402 tons register, from Savannah, with cargo of lumber.

Pilot in	$10 00
Manifest and stamps	4 30
Gratuities	5 00
Discharge fees on customs	502 61
Brokerage	20 00
Total	541 91

Account of expenses of the American brig N N, 402 tons register, for Cardiff, with a cargo of pitwood.

Customs documents	$1 30
Pilot out	10 00
Dues on cargo loaded	116 00
Gratuities	2 00
Brokerage	10 00
Total	139 30

Account of expenses of the American bark X X, 613 tons register, from New York, with 20,082 cases, and 500 barrels petroleum.

Pilot in	$10 00
Customs fees on 823,120 kilograms	926 01
Translation of manifest	5 00
Manifest and stamps	4 30
Gratuities	5 00
Protest	58 71
Brokerage	30 00
Total	1,039 02

Account of expenses of the American bark X X, cleared for Cadiz in ballast.

Pilot out	$10 00
Customs documents	60
Ballast (200 tons)	70 00
Total	80 60

In addition to the before-mentioned expenses an interpreter is required, whose fees vary from $12 to $20, according to work done to the ship.

J. DE CARRICARTE,
Consul.

UNITED STATES CONSULATE,
Corunna, January 24, 1884.

SAN BLAS, MEXICO.

REPORT BY CONSUL LAMBERT.

THE PORT OF SAN BLAS.

ort is located on the west coast of Mexico, in latitude 21° 32′ ı and longitude 105° 18′ 10″ west. It is distant from Cape Saint ıe southerly extremity of the peninsula of Lower California, 3 miles; from Mazatlan on the north 121 miles, and from Man- n the south 193 miles. To San Francisco, Cal., it is 1,459 miles, ıtlan. The Pacific Mail steamships which leave New York on ınd San Francisco on the 15th of each month call at this place ıngers and freight regularly. Fare from San Francisco: Cabin, erage, $35; time between the two ports seven days. A line of steamers ply between Guaymas and Manzanillo, touching at s twice a month each way. The fare by this steamer is $50 ı25 steerage to Guaymas. From Guaymas to Nogales on the t is 290 miles. The fare is $12.90 first class, $10.50 second class, 0 third class, by rail. All fares and freights by the last-named and railroad are payable in Mexican money at an average dis- 15 per cent. From Nogales to any place in the United States is readily ascertained from the usual railroad guide.
acific Coast Steamship Company of San Francisco dispatches a ip monthly, on the 6th, to the Lower California and Gulf ports, ıaymas. Mazatlan is the nearest point they reach to San Blas. ssengers take this route and remain at Mazatlan until the local c Mail steamers arrive to carry them down. Freights from San ɔo are $10 and $15 per ton, by sail $6 and $7 per ton.

CLIMATE.

the seaport towns at this season of the year the temperature ıble, the thermometer ranging about 82° Fahr. at noon in the ıd 70° at midnight. The mornings and evenings are made ex- y pleasant by a delightful breeze blowing in from the Gulf of ia. There are but two distinct seasons along the entire Pacific ımely, the dry and rainy seasons. The former commences here e 1st of November and continues until the 1st of July. At the tioned period the rains commence to fall at very irregular in- ınd in frightful quantities. The atmosphere during that time is ıgly sultry and humid, the local fevers called *calenturas* (chills ɜr), and *el tonto* (intermittent fever), prevail to a considerable

las is situated on a low, sandy beach, and, starting from a point listance south, up to Mazatlan it is an uninterrupted plain, pro- n abundance the fruits and flora of tropical fertility. Water is ıte near the surface, and the undergrowth can only be compared ıngle of India. This belt extends inland from 30 to 40 miles. rest point to the first table lands from San Blas is an hacienda ian village, called Navarrette, distant about 30 miles.
nfortunate coincidence of sultry humidity and an almost entire of sanitary habits among the majority class, involuntarily causes

a stranger to wonder how the people preserve such general good health. Upon reaching Tepic, 3,000 feet above the level of the sea, and Guadalajara, 7,000 feet, these fevers are unknown of local origin.

EL VMOITO OR FEBRE ARMARILLA EPIDEMIC.

On the gulf coast of Mexico this fever prevails regularly as the season approaches. The local name in Vera Cruz is *El Vomito*. I cannot account for this appellation, except that when the peculiar phase of vomiting sets in, the chances of recovery are extremely doubtful. Several cases are known, however, of subsequent recovery.

I have learned that this disease visited the Pacific coast about one hundred years ago, and later about forty years ago. The information, however, I regard more as traditional than reliable. That it is a stranger to this coast is plainly shown from the absolute ignorance of the disease and its treatment, as manifested by the medical faculty here during the epidemic.

San Blas is simply the embarcadero for the large and populous interior of the state of Jalisco. Before the disease assumed its worst form it contained a population of about 3,000 souls. Immediately upon the fatality being known, one half the population, in short, everybody who could get away, left for the interior, the custom-house officials included. Over one-third of those who remained died. The particulars of their death and burial partook largely of the hurried disposition of the bodies after battle by a retreating army. And yet this was all that could be done at that time. Removal and partial interment was performed at the mouth of the revolver or the point of the bayonet. People who live in enlightened communities cannot realize the trials of those poor panic-stricken people during that fearful season.

On the summit of small hill rising abruptly out of the valley, and distant about a mile down the beach, to the leaward of the present town site, stands the ruins of the original settlement, the San Blas of the early Spaniards. It was abandoned about fifty years ago. On the east side of this hill is the burying ground (*campo santo*) located near the old church, made famous in song by the "Bells of San Blas." On account of the exposed condition of many hurried interments in this old consecrated plot, the merchants and officials here are devising ways and means to cover the entire ground with coal and timber and subject it to a grand cremation. Afterwards powerful disinfectants may be used. This proceeding they hope may destroy the germ before another favorable climatic condition returns to propagate the disease.

PECULIARITIES OF THIS EPIDEMIC.

All malarial fevers are claimed to belong to the same family, differing in type, however, with locality and the condition of the individual for receiving the malignant form. That which visited this coast last fall, or rather, this consular district, had in its peculiarities, many of those remarked in the so-called yellow fever of the eastern tropics, with this addition; in a large percentage of cases, death occurred almost instantaneously with the first warning, and while the person was feeling and looking compartively well. Vomiting generally appeared simultaneous with the attack, and many are said to have choked to death. All had the vomit who had the genuine fever. Nor was the vomit considered fatal at all; those who survived the attack were regarded favorable for recovery. It partook more of the nature of pyæmia, and attacked the

stomach as the objective point with more malignity than the ordinary "black vomit," but at a different stage.

The cause of this blood poisoning may have proceeded from urinal suppression or intestinal hemorrhage, both of which were also features of this disease during the subsequent sickness. Enlargement of the spleen was another feature, but the fever was not intense nor hard to control. I am constrained to believe in the germ theory, and that the innoculation may have been so fatal to the system receiving it, that being taken up at once into the circulation its effects operated precisely as any other deadly poison. Even in this malignant form, proper medicines, intelligent doctors, and careful nursing would have saved a very large part of the population. These very important requisites did not exist here. I shall endeavor to learn more on this subject, for the percentage of fatality is, I think, unprecedented.

In order to observe instructions relative to consular reports I have visited Tepic, a city of about 10,000 inhabitants, situated inland on the first plateau, about 60 miles from this port. And I shall select two of the topics embraced within the pending commercial treaty between the sister republics as the base of this letter; namely, sugar and tobacco.

THE JALISCO SUGAR CANE BELT.

Immediately along the beach from here, even farther north than Mazatlan, there is a belt of sandy soil ranging from 5 to 10 miles inland. Between that belt and the foot-hills, averaging 15 miles in width, nearly every acre could be utilized for the immediate cultivation of cane without irrigation. I except this sandy belt, because very little of it is cultivated by the natives. Its possibilities, like the desert lands of California, may turn out enormous, and I believe that will be the ultimate result when once under intelligent cultivation.

The Santiago River empties into the sea about 10 miles to the northward. It has a very fertile valley of bottom land until it reaches the mountain passes. The town of Santiago, 35 miles from here, is about midway to the end of its light-draught navigation, although the same water course runs through to the state of Mexico. The bottom lands of this river, added to the 15-mile belt before alluded, to are now producing cotton, coffee, tobacco, two crops of corn, sugar-cane and rice, to say nothing of the wild tropical fruits. It would not be an overestimate to state that within this area there are from 1,500 to 2,000 square miles of land, capable within three years of landing in San Francisco or New York the largest single locality sugar crop of the world. I speak of its capacity only. To accomplish such a work would necessarily require the organization of syndicates and the aggregation of large capital and labor forces. The sugar could be grown without irrigation; it contains a larger percentage of saccharine matter than that imported from the Sandwich Islands, and the cost of the grade contemplated for export delivered at San Francisco would not exceed 3½ or 4 cents per pound, American gold. That is the outside figure.

Let it be understood distinctly that every enterprise seeking Mexico for investment must be absolutely supported with ample capital. There is positively no field here for a poor man. The conditions of this country and people are peculiarly favorable for the employment and success of capital.

This locality has enjoyed a protracted quiet of twelve years' duration. In 1872 the General Government succeeded in capturing the Indian bandit Lozado and party, and since that time this consular district has

been under military discipline. Although the district is governed under the laws of the state, yet the political chief and commandant is confined in one person, with headquarters at Tepic. Everything is quiet under General Romano's dual administration, and property as safe as anywhere in the world.

Labor in the planting, harvesting, and manufacturing a sugar crop can be relied on for 25 cents, 50 cents, 75 cents, and as high as $1 per day for skilled hands. It is patient, obedient, and willing to work if paid promptly and treated kindly. All the heads of the different departments or branches of the machinery should be American, and possessed with a knowledge of the Spanish language.

The sugar crop to-day is grown in small places along the Santiago River, at some points up and down the coast and in the immediate vicinity of Tepic, where two well appointed factories are established. There is about enough manufactured to supply local demand and furnish the neighboring states of Sinaloa and Sonora. The output of the two factories may be stated in round numbers at 2,000,000 pounds each. The principal product is white loaf-sugar, averaging about 14 cents per Mexican pound, which is about 3 per cent. more than our pound. There is another grade of slightly darker shade, granulated, selling at 10 cents per pound. The next grade is the common "panoche," worth 4 cents per pound. These varieties do not grade with our sugar. Neither sirup nor molasses is ever made nor used by the people of this country.

I have no hesitation in venturing the opinion that at no very distant day there will be safer investments and larger fortunes made by American sugar growers in this State than by the bonanza mines of Nevada, and those who have the nerve to begin first will realize first.

There is an erroneous impression in the United States that no tax on realty exists in this country. There is a tax which only amounts to a nominal sum under present large and invaluable holdings. It exists in every State of the Republic, and in some places it is rated oppressively. Two-fifths per cent. is the tax. As a rule it brings in no revenue, and the entire Government, general and municipal, is compelled to rely upon their excise and varied customs duties for revenue from the tariff only.

Land in any desirable locality no longer retains title in the Government. Nearly every inch of the country is held by people who derrain title from the crown of Spain or former governments of the country. Land is bought and sold in large grants of 10, 50, or 100 miles square, more or less, for a lump sum, and not by the acre. Opportunities frequently offer themselves of purchasing some of these principalities at prices which would astound the land-owners of the east. Since the railroad from this point to Tepic has commenced to assume a tangible possibility there appears to be a disposition on the part of the large land-owners to hold. There is no trouble about getting land even if 40 or 50 cents per acre were asked. That method, however, would not be the proper one to purchase land in this country.

Persons desiring this kind of investment would not find it expensive to send persons skilled in the several branches of producing, manufacturing, and selling down here to investigate this opportunity from a practical standpoint.

THE JALISCO TOBACCO BELT.

There is a large quantity of tobacco grown in this consular district within the fertile belt before mentioned. It is of a good quality for cigar

manufacture, but not intelligently cured or properly handled, so as to compete with the Havana product.

The variety is native, wild, and indigenous to the soil; improved a little, possibly, by the crude methods of cultivation, but, like the cotton crop, it appears to grow of its own accord, and generally outstrips the weeds in the struggle for life. I believe every one knows the construction and operation of the ancient Egyptian plow; that used by the natives here differs only in being of a more archaic design.

When the plant arrives at maturity all the leaves are at once stripped off, tied together in bunches, and swung over a pole for drying. This done they are immediately baled, without picking or classifying, and sent to the different local manufacturers.

It can at once be seen that a process like that is about as erroneous and destructive to the proper preservation and utilizing of the aroma and spices of tobacco as could possibly be discovered.

The quality is very good, and at some future day will become an important article of export under different hands. As it is, they grow about enough for local consumption and supplying the retail trade of this port on the arrival of steamships and sailing vessels.

The yield under this system of planting averages about 2,000 pounds per acre, and brings from 8 to 12 cents per pound. Labor in its production is like the raising of cane or cotton. There is no temptation of political, social, or official rivalry to destroy the usefulness of the laboring class in this country. They occupy substantially an equal position with the Chinamen of California.

With Havana seed, skilled cultivation and curing, enough good tobacco could be grown on this coast to influence to a great extent the tobacco market of the world.

Compostella tobacco is regarded the best. Tepic as well as San Blas cigars owe their reputations simply to being purchasing and manufacturing centers, rather than the growing of crops. On the arrival of steamships and sailing vessels a lively retail trade is carried on between the natives and passengers as well as officers and crew. Cigars by the hundred are sold from $1.50 to $3, the price of the cigar varying only in the luck the different bales have in successfully emerging their contents from the fermentation and premature confinement. These same cigars, however, are as good as those costing from $8 to $12 imported from Havana or made from imported tobacco.

For the cultivation of this article smaller tracts of land might be purchased. It requires the smallest original outlay and quicker returns, but it must be distinctly borne in mind that even this industry cannot be accomplished without capital.

RICHARD LAMBERT,
Consul.

UNITED STATES CONSULATE,
San Blas, January 20, 1884.

AGRICULTURE IN THE STATE OF NUEVO LEON, MEXICO.

REPORT BY CONSUL CAMPBELL, OF MONTEREY.

I have the honor to transmit a report on the agriculture of the State of Nuevo Leon, Mexico, which may be of some interest to manufacturers of agricultural machinery and farming implements in the United States.

It was with great difficulty that I could obtain any approximately correct estimates of the productions of this State, as there is no account kept of anything except what is put on the market for sale.

The State of Nuevo Leon is situated between 23° 5′ and 27° 10′ north latitude, and 30′ east longitude and 1° 26′ 40″ west longitude from the city of Mexico. It is bounded on the north and west by the State of Coahuila; on the south and east by the State of Tamaulipas, and on the southwest by the State of San Luis Potosi. Its greatest length from north to south is 284 American miles, and its greatest width from east to west is 105 miles. Its area is 6,695 square miles. The population according to the best authorities in 1881 was 201,732.

The northern part of the State consists of high rolling plains intersected by very few streams and covered with stubby chapparal, palmetto, and a few maguey plants; the balance, and greatest portion, is broken by high mountain ranges forming many fertile and well-watered valleys. The altitude of the plains and valleys ranges from 1,000 to 2,400 feet above gulf level. The mean temperature of the climate is 70° Fahr. The highest in summer is 96° Fahr., and lowest in winter 47° Fahr. The mercury, however, reached 8° C. below zero on the 29th December, 1880, a circumstance which had not happened since January 7, 1837. The State generally is very healthful at all seasons of the year. Good water for drinking and domestic purposes can be obtained in most any part of the State at a depth from 40 to 60 feet. Besides the Sierra Madre Mountains, there are many spurs, the most of which are Cerro de la Sella or Saddle Mountain, Cerro de la Mitre, Pichaco, Santa Clara, La Iguana, and Gomez Mountains, which divide the country into many beautiful and fertile valleys, refreshed by numerous streams of crystal water flowing from the mountain sides. Some of these streams assume the proportions of rivers, principal among which are the Salado, El Candela, El Sabina, San Juan, Pilon, Monterey, and Lanares. They are naturally perennial, but during the dry seasons some of the smaller ones are exhausted for the purpose of irrigation of crops, leaving only dry beds for many miles below. Fish in abundance, such as the trout, bass, perch, bream, catfish, and eels people these streams.

SOIL.

The soil in the northern part of the State is a gray, sandy loam, very fertile, but on account of the irregularity of rains and lack of rivers from which to irrigate the crops, agriculture receives very little attention. Many herds of sheep and goats are pastured on these plains, which furnish plenty of nutritious grass and shrubs for their subsistence all the year. The central, eastern, western, and southern portions are of a dark, rich loam varying in depth from 4 to 8 feet, under which is a substratum of lime conglomerate. While the general character of the soil is of a dark vegetable loam there are areas containing a large proportion of white and yellow sand, which renders them better adapted to the cultivation of fruits and vegetables. Upon the whole, I do not believe that this country can be surpassed in the world for pleasant and profitable farming. But there have been, and still exist, many reasons why they have not yielded more abundantly, which I will endeavor to set forth plainly and concisely. The first is the inefficiency of the labor. The lands are so rich, and respond so liberally to little cultivation, that it has naturally engendered a chronic indisposition to labor in the working classes, who, contented with just a sufficiency to support them, make no efforts to do more. One able-bodied man cultivates only

about five acres, and he does this with implements of the simplest and most antique pattern. And generally they manifest no desire to arouse from their lethargy and change the old manner for a better.

PRIMITIVE FARMING.

I have visited many haciendas, or farms, and, with very few exceptions, found that they still plowed with the forked limb of a tree, the foot of which has an iron point about 3 inches long. This natural plow-stock boasts of but one handle, and is drawn by a yoke of oxen. It makes a furrow about 2 inches deep by 3 inches in width. In addition to this Adamic plow a short-handled hoe is used in the cultivation of these various crops. As comparatively little small grain is raised in this State, such machinery as mowers, thrashers, separators, &c., are never seen. In answer to the question why the farmers adhered so tenaciously to these pristine and inefficient modes of tilling the soil, I was informed by several intelligent and reliable Mexican gentlemen that it required too much physical exertion to lift about the heavy American plows, and that the reason they preferred oxen was that horses made them walk too fast; hence they clung to the primeval fork and the kind and faithful ox; besides that there existed an almost unconquerable prejudice against the introduction and use of American manufactures. But I am satisfied that before many more seasons come and go these prejudices that haunt the imaginations of this people will give way under the kind and conservative and patient treatment of the American, and that new ideas and a more vigorous life will be instilled by American enterprise and competition. Farm labor is abundant here and commands about the same compensation as in the United States. An ordinary laboring man is paid for farm work from 25 to 50 cents per day, or $8 a month and a peck of corn a week. They are required to work from sun to sun, with one hour at noon for recreation. It requires kind but rigid firmness to control the laborers satisfactorily.

Corn.—While all the farm products adapted to a southern climate can be grown with profit in this State, viz: corn, wheat, barley, rye, oats, rice, beans, sugar, and cotton, the principal and most profitable crops are corn and sugar. Corn yields from 30 to 75 bushels per acre. Where the land can be irrigated this yield is certain and two crops are produced every year, but when they depend on the rain the crop is uncertain, and are never able to secure more than one crop a year, but when the rains are regular the land produces as much per acre as when irrigated by artificial means. I am pretty well satisfied if the farmers would cultivate deeper and more thoroughly, that so much complaint of drought would be uncalled for, and that they would find that the rainfall would generally be sufficient to produce good crops every year. Corn is planted in rows 3 feet apart, and in hills every 7 or 8 inches, with two grains to the hill. The first crop is planted in March, and the second in September, and comes to maturity in June and December. It gets very little attention after it comes up. It is plowed once by the same stick plow, and followed by the hoe. In addition to the regular crop, considerable areas are sowed for feeding stock. It is cut in the tassel and carried to the cities for sale while it is green, getting for it at the rate of $75 per acre. The price of corn averages $1.50 per bushel on the Monterey market. Sometimes after a dry season it brings as high as $3. Strange to say, as much corn as is made, it is shelled in as simple and primitive a manner as it is cultivated. They bind about thirty cobs together, hold this bundle between the knees and with an ear in each

hand, rub them across the larger end of this simple structure. One man can shell in this manner about 20 bushels in twelve hours.

Sugar cultivation.—Sugar-cane is grown to a great profit in any part of the State where irrigation is available. It is planted once in twelve or fifteen years. The culture of this crop, like that of corn, is very shallow and imperfect. The southern and eastern portions of the State are best adapted to the growth of the sugar-cane, though it does well in the greater part of the State. The stalks are generally long and mature almost to the last joint. It produces from three to five hogsheads of piloncillo (crude sugar) per acre. This commands generally 4 cents a pound. The cane is crushed by ordinary iron sorghum-mills and boiled in evaporating pans, similar to those used by small farmers in the United States. The mills are imported from the United States, but the evaporators are made here by hand.

Beans grow well here, but corn and sugar-cane pay so much larger profits but little attention is paid to their cultivation. They are raised abundantly in the adjoining State of Coahuila, and keep well for six or seven years there. In this state they are subject to the ravages of the weevil. They are selling now at 12 cents a pound. This is, however, an unusually high price, ordinarily bringing 5 cents a pound. Rice yields well in the southeastern part of the State and sells at 10 cents per pound.

Cotton.—Cotton is scarcely cultivated at all. It is claimed that the winters are too mild to bring it to maturity; hence a very small quantity opens. I am inclined to believe it is the lack of proper management. A reliable gentleman informs me that he has a small patch not far from Monterey that has been planted twelve years, and that he gathers a crop from it every year. Right here is a dot for the manufacturers of fertilizers. From a few experiments made by the application of ammoniated fertilizers to other crops, I think there is no doubt that a light application to cotton of some stimulating fertilizer would force it to an earlier maturity, thereby overcoming the above-mentioned difficulty and making the cultivation of this staple a success. It is now bringing 20 cents per pound, all of which is shipped from Texas. In the Laguna section of the Republic, which is about 250 miles west of Monterey, the planters are in advance of those of this state in the cultivation of cotton and the introduction of improved agricultural implements. They are increasing the acreage of cotton every year. So much for the staple products of this State.

Vegetables.—Vegetables of every kind luxuriate here. Irish potatoes grow so abundantly wild in the mountains that the gardeners deem it useless and unprofitable to plant and cultivate them. Sweet potatoes grow as a matter of course. No accurate information can be obtained as to the quantity that can be produced on an acre. I am told that they will grow as thick in the ground as they can lie together. Onions claim this as their native clime, growing very large and abundantly. It is useless to dwell longer on vegetables. Suffice it to say, they all grow as fine and in as great quantities as the most enthusiastic vegetarian could wish.

Fruits.—Fruits receive little or no care; they are entire strangers to the plow and the pruning knife. Oranges, lemons, limes, peaches, apples, figs, pomegranates, grapes, and pears all grow well with the least encouragement. Large, delicious oranges are brought to this market by the cart load, and can be bought a half cent apiece. Lemons are not raised so extensively. The apples are small, and of inferior flavor, all of which I am satisfied is the want of the proper cultivation. American apples are retailing on the streets 6 cents each, while the native apple is

6 cents a dozen. Pecans and English walnuts are indigenous to the country, and grow abundantly.

Grasses get no attention, as green food is so abundant the year round, and seems to be preferable to cured hay. Several experiments have been made, and alfalfa yields 20 tons per acre. It grows 6 or 7 feet high, and can be cut several times a year. We are, therefore, convinced that clover and grasses of all kinds would flourish in this soil.

Tobacco is grown to some extent in this state, but I have been unable to procure reliable data. In the first place they do not know how to manage it, and in the next place it is overlooked, when green corn will pay $100 per acre, with very little labor and care, and corn the same, and sugar from $150 to $250 to the acre. Hence they do not care to be troubled with tobacco, preferring to buy it from the United States, and some parts of the Republic of Mexico. Below I append a tabular statement of the various agricultural products of the state of Nuevo Leon, placed on the market, and their respective values.

ROBT. C. CAMPBELL,
Consul.

UNITED STATES CONSULATE,
Monterey, November 9, 1883.

Agricultural productions of the State of Nuevo Leon, Mexico, 1881 *and* 1882.

Articles.	1881.		1882.	
	Quantity.	Value.	Quantity.	Value.
Corn ..... fanegas..	359, 904	$387, 220	397, 840	$971, 620
Piloncillo ..... cargas..	38, 066	279, 944	36, 290	434, 900
Beans ..... fanegas..	5, 511	14, 103	7, 562	25, 676
Barley ..... do....	5, 505	8, 910	10, 010	21, 020
Fodder and straw ..... cargas..	277, 500	77, 245	304, 700	79, 775
Onions ..... arrobas..	103, 252	25, 511	156, 490	33, 935
Beeswax ..... do....	495	9, 110	825	16, 500
Sugar cane ..... surcos..	148, 640	163, 360	234, 264	265, 492
Wheat ..... fanegas..	4, 650	1, 180	4, 700	9, 420
Tomatoes ..... do....	1, 080	540	1, 040	540
Peaches ..... arrobas..	3, 000	375	4, 000	400
Pomegranates ..... do....	5, 000	1, 250	6, 000	1, 500
Irish potatoes ..... cargas..	1, 300	6, 800	1, 850	4, 550
Chile ..... arrobas..	1, 015	2, 150	1, 130	2, 380
Sweet potatoes ..... surcos..	21, 980	5, 680	61, 550	24, 050
Sugar ..... arrobas..	12, 600	37, 800	13, 000	38, 000
Maguey ..... plantas..	1, 292, 300	159, 150	1, 042, 000	550, 000
Ixtle ..... arrobas..	111, 320	85, 220	98, 950	98, 950
Tobacco ..... do	1, 755	4, 165	2, 720	6, 800
Mescal ..... do....	9, 806	36, 988	23, 450	75, 880
Vegetables ..... do....	5, 400	7, 000	5, 900	46, 000

EXPORTS FROM MEXICO.

REPORT BY MINISTER MORGAN, SHOWING THE EXPORTS FROM MEXICO DURING THE QUARTER ENDING SEPTEMBER 30, 1883, *BY ARTICLES, CUSTOM-HOUSES, AND COUNTRIES.*

I inclose herewith copy and translation of the report of the department of Hacienda and public credit as published in the Diario Oficial of the 2d instant, showing the exports from the Mexican Republic during the first quarter of the fiscal year 1883–'84. Also a report showing the exportations for the first quarter of the fiscal year 1882–'83, and the

average of one quarter of the total exportation of the six years from 1877 to 1883.

P. H. MORGAN,
Envoy Extraordinary and Minister Plenipotentia

LEGATION OF THE UNITED STATES,
Mexico, January 22, 1884.

Statement showing the exports from Mexico during the quarter ending September 30,

EXPORTS BY ARTICLES.

Products other than precious metals:		
Henequen:		
Hammocks	$23,487 75	
Cordage	55,354 70	
Raw material	869,930 40	
		$948,
Wood:		
Common	60 00	
For construction	417 00	
Fine	206,451 09	
Mulberry	70,138 26	
Dye	167,223 36	
		444,
Coffee		365,
Hides:		
Tanned	15,133 35	
Goats	44,935 14	
Beeves	174,929 05	
Deer	35,008 73	
Other animals	1,152 17	
		271,
Vanilla		205,
Animals:		
Asses	15 00	
Horses	19,524 00	
Colts	2,580 00	
Mules	3,717 00	
Cows	88,390 50	
Other various animals	530 50	
		114,
Ixtle:		
Cordage	202 25	
Raw material	83,173 47	
		83,
Tobacco:		
Worked	42,376 33	
Raw material	28,324 00	
		70,
Sugar		50,
Herb roots		45,
Caoutchouc		34,
Bees' honey		33,
Fruits		19,
Mexican beans		18,
Copper:		
In bars	2,377 00	
Ore	16,000 00	
		18,
Sarsaparilla		15,
Bristles		10,
Pearl shells		9,
Chick pea		7,
Returned merchandise		7,
Horns		6,

Grain		$6,500 00
Archil		3,961 12
Manufactures		3,078 00
Starch		3,000 00
Fine pearls		3,000 00
Baggage (personal)		2,800 00
Cacao		2,756 16
Loaf sugar		2,489 80
Maize		1,753 00
Lard		1,705 00
Purge		1,593 20
Drugs		1,237 67
Hats		1,055 87
Chicle		1,000 00
Marihuano (opium?):		
Fiber	$570 00	
Down of the flower	300 00	
		870 00
Bones		735 00
Barley		618 90
Bark and fine dust:		
Cascarilla	210 00	
Powder of shells	80 00	
Ordinary	320 00	
		610 00
Cocoanut oil		608 00
Añil		530 00
Common paint		509 00
Marble:		
Common	455 00	
Tecali	55 00	
		505 00
Live plants		393 00
Salt		260 00
Provisions		216 96
Saddles		165 00
Alabaster, unworked		150 00
Machinery		150 00
Old clothes		150 00
Sweetmeats		138 00
Chocolate		124 00
Oil		120 00
Mexican pepper		112 70
Cahuamo shells		100 00
Chapopote (Mexican asphaltum)		100 00
Printed books		74 00
Lentil		60 00
Earthenware of the country		58 25
Medicinal herbs		56 00
Feathers		55 00
Paper money		50 00
Bran		50 00
Alcohol, mexcal		45 88
Limes		40 00
Seeds of plants		40 00
Cheese		26 40
Lead		25 00
Wheat		18 00
Objects of natural history		10 00
Salt meats		9 00
Empty barrels		8 00
Flour (wheat)		6 00
Fodder		5 00
Lime		3 00
Vegetables		1 00
Various articles		1,520 60
Total		2,827,515 12

Precious metals:		
Silver:		
Coined	$6,360,694 71	
Bar	1,153,905 51	
Ore	169,064 95	
Sulphuric	22,618 64	
Dust	1,715 00	
In slags	1,500 00	
		$7,709,498 81
Gold:		
Coined	42,318 50	
Bar	182,892 05	
Dust	7,361 19	
		232,571 74
Foreign coin:		
Silver	37,041 25	
Gold	6,787 50	
		42,828 75
Total precious metals		7,985,899 30

EXPORTS BY CUSTOM-HOUSES.

(*Quarter ending September* 30, 1883.)

Custom-houses.	Precious metals.	Other effects.	Total exportation.
Vera Cruz	$5,880,329 38	$878,980 88	$6,759,310 26
Mazatlan	1,073,390 99	59,796 70	1,133,187 69
Progresso	64,403 50	1,010,167 67	1,074,571 17
Paso del Norte	344,441 83	10,965 60	355,407 43
Tampico	83,376 00	177,129 25	260,505 25
Frontera	6,780 84	172,821 93	179,602 77
La Paz	119,112 76	27,312 72	146,425 48
Isla del Carmen	500 00	112,590 20	113,090 20
San Blas	89,395 45	11,726 70	101,086 15
Matamoros	56,752 29	42,235 59	98,987 88
Manzanillo	67,845 00	5,148 40	72,993 40
Guaymas	57,773 43	6,060 00	63,833 43
Tuxpan		58,650 50	58,650 50
Acapulco	21,801 42	34,720 00	56,521 42
Mier	15,015 00	24,697 75	39,712 75
Salina Cruz	15,140 00	23,348 03	38,488 03
Nogales	28,541 41	9,682 50	38,223 91
Piedras Negras	4,471 00	28,909 00	33,380 00
Campeche	8,200 00	24,781 00	32,981 00
Ascension		27,996 00	27,996 00
Altata	20,715 00	4,292 70	25,007 70
Zapaluta	23,950 00		23,950 00
Tonalá		17,264 74	17,264 74
Coatzacoalcos		16,298 80	16,298 80
Todos Santos		11,989 36	11,989 36
Soconusco		11,290 70	11,290 70
Guerrero	800 00	7,425 71	8,225 71
Palominas		5,380 00	5,380 00
Camargo	1,000 00	2,425 96	3,425 96
Tijuana		2,810 00	2,810 00
Cabo de Sn. Lucas	2,200 00	504 73	2,704 73
Puerte Angel		70 00	70 00
Baluix de la Magdalena		42 00	42 00
Total	7,985,899 30	2,827,515 12	10,813,414 42

EXPORTS BY COUNTRIES.

(*Quarter ending September* 30, 1883.)

Whither.	Precious metals.	Other products.	Total exportation.
England	$5,368,496 20	$415,483 04	$5,783,979 24
United States	1,893,987 05	1,797,189 04	3,691,176 09
France	591,823 99	161,972 04	753,796 03
Spain	13,833 00	246,678 30	260,511 30
Germany	73,668 12	161,734 13	235,402 25
Belgium	.....	27,424 00	27,424 00
Guatemala	24,950 00	1,540 87	26,490 87
Colombia	19,140 94	6,438 70	25,579 64
Russia	.....	4,640 00	4,640 00
San Salvador	.....	4,415 00	4,415 00
Total	7,985,899 30	2,827,515 12	10,813,414 42

Comparative résumé of merchandise exported during the quarters ending September 30, 1882 *and* 1883.

Articles.	Quarter of 1883.	Quarter of 1882.	Average of one quarter of the total exportation of the six years past, from 1877 to 1883.
Henequen	$948,772 85	$794,967 91	$523,304 87
Woods	444,281 71	378,939 24	395,320 44
Coffee	365,438 00	235,536 44	493,005 10
Hides	271,158 44	195,815 79	388,688 98
Vanilla	205,536 50	144,883 25	109,511 21
Live animals	114,757 00	37,720 00	58,390 43
Ixtle	83,375 72	154,793 73	102,276 21
Tobacco	70,700 33	81,129 10	69,936 60
Sugar	50,264 03	49,077 05	74,943 44
Herb roots	45,804 60	12,977 50	10,154 47
Caoutchouc	34,831 49	26,782 51	20,761 16
Bees' honey	33,607 49	39,420 72	20,135 87
Fruits	19,296 80	18,287 75	10,850 56
Mexican beans	18,611 10	26,737 00	17,108 78
Copper	18,377 00	4,750 00	11,079 66
Sarsaparilla	15,767 40	4,920 12	11,822 77
Bristles	10,473 86	5,000 10	9,665 89
Pearl shells	9,760 00	7,390 00	10,778 97
Chick-pea	7,775 50	8,830 19	3,775 11
Grain	6,500 00	492 00	17,356 92
Archil	3,961 12	8,101 56	26,706 94
Fine pearls	3,000 00	2,000 00	7,642 50
Maize	1,753 00	36,645 66	8,117 18
Loaf sugar	2,489 80	11,878 40	6,198 18
Purge	1,593 20	3,063 00	7,408 29
Chicle	1,000 00	3,881 08	8,109 46
Añil	530 00	.....	37,047 65
Lead	25 00	.....	8,702 35
Vegetables	1 00	4,726 48	1,667 95
Medicinal drugs	.....	13,283 00	1,816 77
Various other articles which are not specified, as the exportation thereof does not amount to $10,000 per annum	38,072 18	34,099 65	59,082 01
	2,827,515 12	2,346,129 23	2,525,345 72
PRECIOUS METALS.			
Silver:			
Coined	6,360,694 71	4,806,167 91	4,126,329 91
Bar	1,158,905 51	886,280 17	855,964 13
Ore	169,064 95	48,703 39	111,957 84
Ore, sulphuric	22,618 64	6,346 00	4,554 67
Ore, small	.....	36 00	4,122 84
In dust	1,715 00	.....	.....
In slags	1,500 00	.....	.....
Worked	.....	.....	213 95
Argentiferous lead	.....	.....	2,963 55
Gold:			
Coined	42,318 50	52,835 50	182,827 19
Bar	182,892 05	133,704 32	93,756 66
Dust	7,361 19	.....	.....

Comparative résumé of merchandise exported, &c.—Continued.

Articles.	Quarter of 1883.	Quarter of 1882.	Average of one quarter of the total exportation of the six years past, from 1887 to 1883.
PRECIOUS METALS—Continued.			
Foreign coined:			
Silver	$37,041 25	$44,734 30	$73,224 61
Gold	6,787 50	26,019 55	48,661 23
Amount of metal	7,995,699 30	6,004,827 14	5,504,586 58
Amount of other products	2,827,515 12	2,346,129 23	2,525,345 72
Total	10,813,414 42	8,350,956 37	8,029,932 30

SECTION 7, *Mexico, December*, 1883.

J. M. GARMENDIA.

MINES AND MINING IN LOWER CALIFORNIA.

REPORT BY CONSUL VIOSCA, OF LA PAZ.

Industrial mining productions make the fairest exhibit among the many other articles exported—$602,017 value of silver bullion shipped from the only three working mills existing in the several mining districts, against the total computation of $1,199,015.26, capitally compares with the other natural resources as being the most prominent and promising branch of industry for an early and lucrative opening of the country to the mining interests of the United States.

The mining industry began to develop in Lower California about the middle of the eighteenth century, conquering at last the many obstacles thrown in its way by the missionaries, who said that miners who, for the most part, were taken from the very dregs of society, would introduce disorder, bad habits, and, in a word, all the vices unknown among the neophytes of the missions.

The active and intelligent Manuel Ocio,* who had realized a fortune in the pearl fisheries, was the first to invest largely in mining enterprises. There are yet to be seen in the neighborhood of the San Antonio district the remains of an establishment said to be his and called the foundry.

In approaching this topic of the mineral wealth of the territory, I do it with the utmost reserve and hesitation, satisfied of the insufficiency of my knowledge to render such an account as would be valuable or instructive in a scientific point of view. I shall, therefore, confine myself to what came under my personal observation, with a few suggestions which have arisen therefrom.

The peninsula is divided into several ridges, the northern range terminating on the plains of San Ignacio, running along the western coast to San Borjas, and from thence crosses to the eastern side. A section of the northern range, as well as the central which follows it, extends to the Bay of La Paz, having on their western slopes extensive plains and table-land.

The mineral veins in the mountains which extend from the territory run north and south, with an inclination east and west; the largest

* Don Manuel Ocio, one of the soldiers of the president at Loreto, honorably discharged in 1748, devoted himself to the pearl fishery, and became the absolute master of that branch of commerce. He was the wealthiest man in California at that time.

quantity of the veins are superficial, being covered thinly with a kind of stone used for grinding, limestone, &c.; the metallic veins are deeper and richer, although they have not been yet excavated to sufficient depth to enable me to speak with certainty in regard to them. Thus much by way of introduction.

DISTRICT OF MULEGE.

Gold, silver, copper, graphite (oxidulated iron), Las Virgenes Volcano, sulphur, alum, and magnesia. The mountains between San Ignacio and San Borga, have numerous metallic veins, among which predominates sulphurous pyrites, carbonates, and sulphurets of gold, silver, and copper, besides a great quantity of oxides of iron. In the quartz veins which cross the hills in the vicinity of the mission of Santa Gertrudis, gold is the predominant metal.

LAS VIRGENES.

The principal group terminating the range of Las Virgenes Mountains is composed of three conical mountains, volcanic, surrounded at their base by two large streams, that of Santa Anna on the north and Santa Maria on the south. The principal crater is on the northern slope of the central mountain. The table land opposite on the northwest is noted for its sterility. An acrid vapor, indicating the presence of sulphurous acid, is almost constantly escaping from the crater. On its borders and lower down, within a radius of 55 meters, the ground is perforated by innumerable orifices, emitting sulphuric streams, which, coming in contact with the atmosphere, form crystallized needles and threads of pure sulphur. From the principal crater runs a stream of water strongly impregnated with sulphuric acid, which leaves in its course a whitish sediment similar to chalk, insoluble in fresh water and of a styptic nature, and presents the remarkable phenomena of petrifying everything with which it comes in contact susceptible of absorbing it.

Another curious circumstance is the existence of small fishes, *cabezones*, that are found in the reservoirs which the water has excavated in the mountain side. One-fifth of the ground constituting the solid surface of the volcano contains *caliche*, as the natives call the earths of pure sulphur. Under this covering there is a mass of whitish fine and liquid mud, which has been sounded to a depth of 3 meters with a temperature of 90 degrees.

I must also mention a warm spring which runs from the side of a low hill, and irrigating with its waters a small piece of land covered with wild palm and fig trees forms an oasis in the midst of that arid and solitary desert, and is the camping ground of the few travelers whom curiosity attracts to the volcano.

The Santa Maria Creek, which runs around the southern base of the Virgenes ridge, also empties itself in the bay of that name. It runs through hills composed of sulphuret of lime, which presents itself in every form, aspect, and color, owing to the metallic oxides with which the soil is impregnated. Slabs of gypsum, properly alabaster, have been found, of magnificent quality, the prominent colors being dark and pale yellow (produced by the oxide of iron), sea-green, emerald, deep red, and even black.

The cove of Santa Maria, being sheltered from the north, northeast, and northwest, affords a safe anchorage. Lime and alabaster can be found 3 miles from the beach, by a level road.

ISLAND OF SAN MARCOS.

The soil of this island, which is situated some 12 miles southeast of Santa Maria cove, presents the same aspect and is composed of the same materials as those I have just mentioned. Gypsum is at the present day shipped from the said island to the San Francisco market by an American company.

COMONDU DISTRICT.

At the place called Sance, situated on the eastern slopes of La Giganta Mountain, in the neighborhood of San Juan ranch, and 8 leagues from Loretto, some very rich copper veins have been discovered, entirely different in their composition from that of all other copper known. They contain free copper, that is to say, copper in its metallic state, sulphurous pyrites, and, it is supposed, an alloy of gold. From the vein properly called the Sance, worked also by an American company, under the management of Mr. William Williams, they have lately extracted free copper plates, some weighing as high as from 100 to 130 pounds. The metalliferous substance is disseminated throughout the quartz, together with free copper and red oxide of iron.

There are other copper and silver veins.

ISLAND OF SAN JOSÉ, DISTRICT OF LA PAZ,

Some metalliferous veins cross the island of San José, the southern extremity of which, with the northern end of the island of Espiritu Santo, form the channel through which ships of a certain tonnage enter the beautiful bay of La Paz. The most important of those veins are the three owned and worked by Mr. Federic Ernst, a very able and industrious miner, who has put up a five-stamp mill on the island, and is now reducing the ores by the lixiviation process.

CACACHILES AND LA TRINCHERA.

All the sections of the ridge bounded on the west of the bay of La Paz, south of La Trinchera, and east of the Gulf of California are profusely crossed by metalliferous veins, especially those of Cacachiles and Las Virgenes ridges, which contain silver ore of great richness. There, the richest productions of the territory differ materially from the minerals extracted from other localities up to the present time; they are sulphurets of lead, silver, chloride of silver mixed in quartz, together with carbonates. Sometimes these sulphurets are mixed with a layer of argile, containing metallic oxides. The principal ingredients in the matrix are carbonate of lime and magnesia. In some instances silver is found.

TRIUNFO DISTRICT.

The works of the Progress Company, now owned chiefly by English capitalists, were commenced about twenty years ago by an American company of San Francisco. The mining town of Triunfo contains about 4,000 inhabitants, all of whom are connected with or supported by the mining interest there. The mill is composed of sixty stamps, in place of ten, which was the capacity established by the founders of the institution, and is in constant operation. The present regular product of the establishment is about $45,000 per month in silver bullion, which

contains a small percentage of gold. A railroad connects the mill with the mines, a distance of about 3 miles.

The company owns some fifteen mines, all of which produce ore of an average tenor of about $60 per ton. Only three or four of these mines are operated at the same time, as these produce all the ores required by the present mill. The process used is also that of lixiviation.

COST OF TREATING THE ORES.

The native Mexicans of California are known to be good miners. They are sober, industrial, and frugal, and lack all the rough elements of a frontier population. They work in and about the mines from boyhood. Their labor may be had to any extent, at from 90 cents to $1 per day. Wood of the best quality is abundant, and is furnished at the mill for $6.50 per cord of 128 feet. Timber suitable for timbering the mines, strong and as durable as white cedar, costs $1 per frame. Charcoal is abundant for smelting and refining. Salt may be had from La Paz at reasonable rates, a distance of about 45 miles. With these prices, which are not likely to increase at present, a careful estimate, intended to cover all possible contingencies, places the cost for mining the ore at $11, and of treatment by lixiviation at $15; in all $26 per ton of 2,000 pounds.

The laws of Mexico are generally and specially protective to the mining enterprises. That mining for the precious metals can be prosecuted at a profit, it is beyond a question a practical fact. Every material for the treatment of the ores, if not produced in the country, is free of duty, and all possible convenience is afforded by the local authorities here towards encouraging miners and mining capital.

JAMES VIOSCA,
Consul.

UNITED STATES CONSULATE,
La Paz, Mexico, January 4, 1884.

EXPORTS FROM MARACAIBO.

REPORT BY CONSUL PLUMACHER.

Coffee.—This article in 1882 showed an exportation of 31,627,051 pounds, and in 1883 only 29,943,788 pounds, with, however, a steadily increasing value; that of the crop of 1882 being $3,052,100.84, United States gold, as against $3,119,676.59, United States gold, for the year 1883; although in the latter period the amount of exported was 1,683,263 pounds less than in 1882.

Cacao.—This product shows a decreased exportation, but with much improved prices; a great part of the crop has been sent to Mexico. Cacao must ultimately be in Venezuela a most important and lucrative branch of trade.

Duina bark.—The Duina bark shipped from this port is almost exclusively of Colombian production, notwithstanding the immense tracts of the "chinchona" recently discovered in that republic, which should give new impetus to the exportation of bark.

Balsam copaiba.—The year 1883 shows an increase of export amounting to 20,000 pounds against 1882. This article is generally bought in small quantities by the druggists and is also exported by them, giving

great profits. The export of this article could be done on a much larger scale without any difficulty.

Fustic and divi-divi.—Have been largely exported. The crop of divi-divi has been very large, and the prospects of the new crop is very promising. Both articles continue to be largely exported, and it is likely that they will be, as in the past, a source of great profit both to ship-owners and merchants.

Europe monopolizes the trade in these products, and nearly all foreign vessels are loaded with one or the other or both.

Hard woods.—Other articles of native production remain substantially unchanged. I have written in my former reports on the immense wealth of hard woods suitable for blockmakers, manufacturers of fire-arms, and others of similar occupations, and should be glad if the attention of our consumers could be attracted to these rich woodlands; it would relieve our country of the constant drain upon its forests, and may also be of financial profit, as it would cost less than in securing supplies from our own country.

Petroleum.—The petroleum and mineral wealth of this consular district, on which I reported fully some years ago, seems to be attracting great attention now, as we had a competent American engineer from Oil City here to investigate.

E. H. PLUMACHER,
Consul.

UNITED STATES CONSULATE,
Maracaibo, January 31, 1884.

MANUFACTURE OF SALT IN GODERICH.

REPORT BY CONSUL CHILTON.

The salt manufacture in this neighborhood, which a few years since was considerable, has of late diminished to such an extent that a report of the industry now, especially in view of the voluminous communications of some of my predecessors upon the subject, would seem to be almost superfluous. I submit a brief statement, however, chiefly with the view to show the decline of the production and the serious falling off in the exports from this district, especially to the United States, within the past few years. The cause of this decline will, of course, readily suggest itself. The vastly increased manufacture of salt in the United States and the consequent lowering of price, combined with the existing rate of duty upon the foreign article, virtually closes the American markets to the Canadian producer of salt, except in inconsiderable quantities.

At the present time there are five salt works in operation here. At the principal works—the International by name—brine is pumped from a 3-inch hole through an iron pipe of the same dimensions from a depth of a thousand feet into a tank, where it goes into pans, four in number, where it is boiled. The size of the pans is 120 by 32 feet. For fuel wood or coal is used. When working at full capacity the amount of 600 barrels of salt per day is produced. This is stored until perfectly dry, and is then packed in barrels of elm staves for shipment, mainly by vessels, to Canadian ports. The bulk not in barrels is shipped by water to Chicago, a yearly average shipment varying from 1,500 to 2,000 tons of fine and coarse salt. The export for this year, however, has been far less than the usual average (only some 900 tons), owing to the

low rates ruling in the Chicago market. The supply of the Canadian market forms, of course, the chief business of these works. Their salt stands in the brine 100 per cent. in the manufactured state, according to an analysis made in 1872, and no change it is stated has taken place since; 98.739 of pure common salt, the remainder being composed of magnesia and gypsum.

Three other salt works here have, combined, an evaporating capacity of about 200,000 barrels per annum, which amount might be increased to half a million barrels could a market be found for it. At present they are manufacturing about 60,000 barrels for the Canadian market and comparatively none for the United States market, a single cargo only, of 600 tons of coarse salt, having been sent to Chicago this season by the three manufacturers I refer to. Their mode of making salt is upon flat pans 24 by 120 feet, with fire heat, the fuel used being principally wood. The average depth of the salt bed, which is 100 feet thick, is about 1,100 feet, and it is claimed, not without reason it would seem, to be as pure, if not the purest salt yet discovered in the world.

R. S. CHILTON,
Consul.

UNITED STATES COMMERCIAL AGENCY,
Goderich, Ontario, December 12, 1883.

THE JUTE TRADE OF DUNDEE.

REPORT BY CONSUL WELLS.

Throughout the past twelve months the jute industry of Dundee has been in a more satisfactory condition than for some years back. This is chiefly owing to jute having remained very low in price during seven or eight months of the earlier part of this season.

The quantity of jute imported direct from Calcutta and Chittagong (India) into Dundee from 1st January to 30th September, 1883, inclusive, shows a very large increase over last year. During this time there arrived in Dundee from above-mentioned ports 99 vessels—7 steamers and 92 sailing ships. Of this fleet 71 came from Calcutta and 28 from Chittagong. The aggregate registered tonnage of these vessels was 143,439 tons, and they brought cargoes amounting to 1,013,109 bales of jute. The arrivals for same period in 1882 were 76 vessels, of 110,299 tons, bringing 766,126 bales of jute. Thus showing an additional 33,140 tons and 246,983 bales for said 9 months of this year.

A remarkable feature in connection with jute importation into Dundee this year is the large number of vessels that have arrived from Chittagong. A few years ago this town as a loading port was comparatively unknown, and very seldom a vessel sailed from thence to Dundee with jute. Of late, however, the attention of merchants, shipowners and others have been turned to this place, the natural advantages of which are believed to be such that with proper facilities it will soon outrival Calcutta. Merchants have on many occasions acknowledged that the jute loaded in Chittagong is of better quality and arrives in this country in superior condition to that brought from Calcutta, while the port expenses are much less than those levied at Calcutta. This is a very important matter, as a too large percentage of the jute coming into Dundee from Calcutta within recent years has been so damaged as to entail a serious loss to importers.

This season has not been characterized by quick passages, which is accounted for by unfavorable weather. The average passage of the vessels noted has been for sailing ships 127 days, and for steamers 57 days. Last year the sailing vessels averaged 120½ days and steamers 45 days.

Freights have not been high during the past year, averaging about $12.50 per ton for sailing vessels via the Cape, and $15 via the Suez Canal. During the last three months they have, however, been considerably lower, say, $10.50 and $13 per ton, respectively. The general impression is that the rates will improve when this year's new crop is ready for shipment. The following table shows the imports of jute, direct and from all sources, into Dundee for the years mentioned:

Years ending December 31—	Direct importation.			Total importation, all sources.
	No. of vessels.	Tonnage.	Bales.	
				Tons.
1870	26	30,317	207,208	81,740
1871	57	60,690	473,097	102,844
1872	77	94,450	649,677	127,190
1873	81	101,440	709,871	143,150
1874	62	77,401	529,197	117,375
1875	62	83,252	573,230	113,930
1876	63	87,540	582,249	118,571
1877	50	68,568	456,209	107,616
1878	72	97,353	658,585	128,508
1879	79	101,486	739,172	151,291
1880	60	81,131	579,635	139,962
1881	84	116,101	825,862	160,273
1882	86	124,617	864,669	168,821
1883*	99	143,439	1,013,109	205,006

*From January 1 to September 30.

This table shows the great increase in quantity of jute brought direct into Dundee since 1880. This year's import it is expected will far exceed even that of 1882.

The extraordinary and rapid development of the direct trade between Calcutta and Dundee is due to the enterprise of manufacturers and merchants here, and to the splendid facilities provided at this port for quickly berthing vessels and discharging their cargoes.

The prices for unmanufactured jute since September last (1882) remained low until May of this year, when they began gradually to rise, till they now stand about £1 10*s.* per ton higher than last year at this date, and are over the average rate of the past five years. As this season's crop is said to be 25 per cent. short of last year's, it is anticipated that prices will rise somewhat higher than they are a present. Meantime there is quite an excitement in the jute market and quotations are hardening. The following table shows—

Price of jute for 1883 *and* 1882 *at time specified.*

Quantity.	Price per ton.	
	September 30, 1883.	September 30, 1882.
	£ *s.* £ *s.*	£ *s.* £ *s.*
Fine	18 10 to 20 0	17 0 to 19 0
Good medium	16 0 to 17 0	14 10 to 16 0
Medium	14 0 to 15 0	13 0 to 14 0
Good common	12 0 to 13 0	12 0 to 13 0
Rejections and commons	10 10 to 11 10	10 0 to 11 0

The question of the cultivation of jute in the Southern States is engaging the attention of some of our prominent men, and a great deal of communication on this subject has been carried on with this office by gentlemen in the United States interested in the experiments of growing this fiber that have taken place in Louisiana. All the information available at this office has been rendered in reply to these inquiries, and in return reports and investigations published by these parties have been forwarded here. The magnitude the jute industry has assumed, and the enormous value of the imports of the raw and manufactured article into America, makes it to be of the highest commercial importance that jute culture in the United States should be persevered in. The jute plant is not delicate and requires comparatively little labor while growing. Its cultivation, therefore, in such States so well adapted in soil and climate as Louisiana, Georgia, South Carolina, Texas, and Florida, is well deserving of every encouragement. If the machinery known as the Smith Decorticator, and which is stated to have proved a decided success, can be so perfected as to properly decorticate the jute stalk, American planters will be enabled to compete with the cheap labor of India, and at the same time save more of the fiber, which by this process is also of better and more even color and quality. Then, there can be no reason to doubt but jute might be a very paying crop to raise by our Southern agriculturists, who are commended to study the practicability of this suggestion.

The following very encouraging letter, from the editor of the American Trade Journal, has been received at this office:

SAINT LOUIS, *October* 16, 1883.

SIR: We send you by this day's mail a few copies of the American Trade Journal, and shall feel obliged if you will distribute them among such manufacturers or merchants in Dundee as are most interested in the question of the production of jute in the United States. You will notice in this issue that the question of the ability of our planters to compete with India has been settled, and that the Mississippi Valley is destined to become the greatest producer of jute in the world, and that it offers the greatest inducement to manufacturers.

Yours, &c.,

Burlaps, baggings, and other jute goods have remained low in price in America during the most of the past year, and manufacturers and merchants here have been complaining all along about the rates obtainable, and stating that they have not been profitable. Notwithstanding this, immense consignments of burlaps and other jute fabrics have been sent from this locality to New York, Philadelphia, Boston, Chicago, and even San Francisco. At least $6,000,000 worth of purely jute goods have been declared to at this consulate during the past year, from the coarsest baggings to the most beautifully designed Brussels carpets, rugs, plush, &c. Burlaps have, however, been the articles principally exported, the total value of these alone reaching $4,046,865.88.

These facts ought to stimulate a much larger production of jute goods in the United States than is presently taking place. It is admitted that the greatest difficulty in the way of jute manufacturing in America is the spinning part of the business. Spinners have to be trained up to their department from early girlhood, and the wages they receive here is only about one-third of what they get in America. While this is true, it is asserted that lots of yarns could be imported, dyed and woven into cloth in America, profitably as well as in this country. If the weaving of jute fabrics was once firmly established in our large centers of population, arrangements could then be suitably made for getting the yarns also spun cheaply. A firm in this town who were determined not to

lose any advantages in carrying on their business, ceased sending their manufactures—burlaps—to customers in America; but opened up themselves a bag-making factory in Chicago, and are, it is understood, reaping a fair return for their enterprise. Another Dundee merchant of the best standing has just adopted the same policy in every particular. This shows that the manufacturers and merchants here are ever on the alert to seize the opportunity to forward their interests. The duty on bags some years ago having been raised to 40 per cent. ad volorem, as against 30 per cent. ad volorem on burlaps, effectually stopped the export of bags from Dundee to the United States. The firms alluded to, believing that by sending out their cloth to Chicago and there making it into bags, that they would thereby gain the full benefit of both processes of production, carried out such a scheme, and can by so doing compete keenly with their American rivals and yet realize a reasonable profit.

These facts go to suggest the practicability of Americans importing jute yarns, weaving them into burlaps, and then turning the same into bags. Jute-weaving can so be learned by any ordinary girl or woman, and does not, like spinning, require the dexterity of hand that can only be acquired when very young. The jute goods chiefly useful and most largely consumed are burlaps.

Now, as the making of these goods does not demand much artistic or mechanical skill, and as the enormous import of them—50 per cent. of the total production of Dundee—into our country is yearly increasing, our capitalists are strongly urged to endeavor, as they easily can—at least to the extent indicated—to add this industry to those already flourishing in the United States.

WILLARD B. WELLS,
Consul.

UNITED STATES CONSULATE,
Dundee, November 14, 1883.

TRADE IN THE BAHAMAS.

REPORT BY CONSUL M'LAIN, OF NASSAU.

During the last three months of the year there has been a very marked increase in the importation of provisions into this colony, all coming from the United States. The people of these islands, at all times largely dependent upon the United States for their food supply, are now compelled to rely more than ever upon that country for their provisions, owing to a deficiency of native products.

DROUGHT AND HURRICANES.

Drought.—The colony has suffered during most of the year from a severe drought. During April and May the absence of rain caused the pine-apple crop—one of our principal reliances—to mature too rapidly, the fruit, in consequence, being generally undersized; prices also were lower and the quantity shipped less than usual.

Hurricanes.—The later rains, which were confidently looked for, failed also to put in an appearance, and the ordinary field crops were substantially a failure. Then, as if to cap the climax of our troubles, a very severe hurricane—the details of which were reported to the De

partment at the time—swept over a large portion of the colony on the 8th of September, uprooting many fruit trees and stripping the fruit from others, until of oranges, lemons, bananas, grape-fruit, and cocoanuts we have really little or nothing left for export.

Sponge trade.—The hurricane also worked its ravages upon the sea, and from one-quarter to one-half of the sponging fleet was either totally destroyed or badly damaged. A general feeling of timidity prevailed among the sponging population on account of the great loss of life during the storm, so that for some time many refused to go to sea again in quest of sponges. Thus the market was left destitute of sponges to a great extent during September and October; shipments fell to a nominal point, and hundreds of laborers were thrown out of employment.

In consequence of this condition of affairs, local trade fell off, all industries were temporarily affected, and no little suffering was entailed upon the laboring classes; indeed, for some weeks subsequent to the hurricane, quantities of supplies had to be furnished at public expense, to prevent widespread suffering and, in numerous cases, actual starvation. Much of the imported food will have to be furnished to the laboring classes on credit, future crops and labor being pledged in payment.

Imports and exports.—As a natural sequence of this increase of importation and decreasing exports the rate of exchange on London, and especially on New York, has advanced nearly 50 per cent. within the last two months, which, of course, is unfavorable to trade. There are indications, however, that this advance will not be long maintained. A continuance of a high rate of exchange would result in such shipments of specie to the United States as might derange seriously the currency supply of the colony, which is not overlarge at best.

Salt trade.—The salt trade still remains dull; stock on hand abundant, but few shipments. Some large dealers are trying to avail themselves of the change in the American tariffs and are in correspondence with extensive packers of meat and fish for export in the United States, having hopes that the superior curing quality of the Bahama salt, and the practical abolition of duty on the foreign salt used by such packers, will stimulate the trade with this colony.

NEW TRADE WITH THE UNITED STATES.

I notice during the last six months the development of a new branch of trade between this port and the United States. I refer to the matter of Christmas toys, fancy articles, presents, and holiday goods generally. Heretofore, nearly all of this kind of goods, large quantities of which are sold here, came from England direct. The failure of the British steamers to arrive in time on several occasions—once coming into port *after* the holidays—induced some dealers to try the American market a year ago, the venture proving so satisfactory that this year the windows and counters of some leading merchants are full of very attractive goods of this sort purchased in New York, and which, I am informed, are eagerly sought for and are affording a satisfactory profit to the dealers. This trade, now fairly inaugurated, will not drift back again into the old channels with the "mother country."

THE OUTLOOK.

I am happy to state that the year closes, however, with a more hopeful feeling prevailing in the colony, despite the disasters of the past twelve months. The early vegetables, including potatoes, are beginning

to come in, which will relieve the necessities of many of the poor. The spongers are recovering their courage, their damaged vessels have been repaired and new ones are being built; many have resumed their occupation, and already, during this month of December, sponges are beginning to come in, and all things point to an early resumption of this important industry. Planters are looking after their pine-apple fields, and are counting much upon the fact that the removal of the duty of 20 per cent. on that fruit at American ports will make to their profit on the shipments of the coming season.

TRADE RELATIONS WITH THE UNITED STATES.

The trade relations of this colony with the United States are already so intimate—daily becoming more so—that, even from a selfish point of view, our manufacturers and producers cannot afford to be indifferent to the welfare and prosperity of the Bahamas. These islands have already given the bulk of their trade to the United States, as I have often shown in previous reports, the people entertain the most kindly feelings toward us, and the fault will be our own if we do not, within a very few years, monopolize the entire business of the colony—a market lying at our very doors.

THOMAS J. McLAIN, JR.,
Consul.

UNITED STATES CONSULATE,
Nassau, New Providence, December 15, 1883.

TUNSTALL POTTERY.

REPORT BY CONSUL LANE.

Although the United States tariff laws are both sadly deplored and warmly denounced, I believe the United States is still the most promising field for the sale of the staple manufactures of this district, not excepting the United Kingdom itself, and the best analysis of the situation I am able to make induces the belief that the despondency of manufacturers lies in a gradual cessation of large profits, rather than in the alternative of suspending business or continuing at an actual loss. A good harvest now secured has revived a hope, deferred even to heart-sickness, of an improved home trade. It will require a few months to test the virtue of this tardy relief, the hope of which, I trust, will not prove illusory. But even if the hope of profitable farming under present systems in Great Britain is not chimerical regardless of seasons, its fulfillment will hardly check the growth of another element in the industrial depression of the country, viz, foreign competition.

There is ample of what might be termed surplus capacity in the plant and ready resources of this district for the production of the two of three million dollars' worth of foreign pottery annually consumed in this country. Nevertheless, continental wares are displayed in profusion in the shops of Liverpool, Manchester, and all other large towns which I have visited. They are mostly fancy and highly decorated goods of no great artistic merit, but they are fine enough to be tasty and attractive without being extravagant in price, and find their chief patrons among those who, as connoisseurs as well as socially, may be ranked with the middle class. Intrinsically, I believe they are inferior to the best English

goods of a corresponding grade. Many of them exhibit less care and completeness in decoration, and notably in gilding the work is often done in a cheaper and less durable manner. In the texture of the body and the general quality of the ware itself it is believed also that the English manufacturer excels his continental competitor, but from optical evidence only the rivalry in this particular must be rather vaguely supported on either side, for it must not be forgotten that, in the matter of pottery, decoration is a very charitable agent and "covers a multitude of sins." But whatever may be the shortcomings of the continental wares, so long as they are attractive in appearance and can be sold in English markets for less than the corresponding English goods they will continue to be a growing menace to the advantages which the latter should naturally enjoy in their own country. And as the era of ceramic decoration is rapidly reaching a wider if not a riper development the field of competition is not likely to be circumscribed.

On the subject of decoration and artistic pottery a word of suggestion to American potters may be pardoned. It is very clear that the pottery industry can attain to no great eminence, or even commercial importance, with this element left out or even holding a subordinate place. There is no great industry in which the artistic and the useful, the higher and the lower forms of education and skill are brought into such sympathy and mutual support as in the manufacture of decorative pottery.

Those who are endeavoring to increase the importance of pottery production in the United States cannot turn their attention to this feature of it too soon, too constantly, nor too thoroughly. This may seem a platitude which might with equal truth be said of any other enterprise. But I consider it especially pertinent in this department for these reasons.

The growth of the artistic element in the people, the accumulation, so to speak, of the varied qualities of taste and skill essential to the demands of the work, are unavoidably slow. There is no competitive industry in which for this reason the superior resources of the Old World are more readily at hand. But on the other hand there are few schemes for the high employment of heads and hands to which, in a new country possessing the raw materials both of matter and mind, the people and the Government can better afford their encouragement and protection. To this end, education more systematic than mere apprenticeship should in some form be directed. Some system of technical instruction, the advantages of which would find especial utility in the fashioning and adornment of clay, ought to find local establishment in every place at least where the industry is carried on. It is needless to add that by some provision such institutions should be open to the poor as well as the rich.

The e is no doubt that the root of much of the successful foreign competition in English markets before mentioned can be traced to the technical schools of France and Germany. This matter of technical education is now engaging the serious attention of the British Government through the agency of a Parliamentary commission, one of the members of which, Mr. Wm. Woodall, the senior member for this borough, is a resident of the Potteries and himself a manufacturer. The labors of this commission have been almost continuous for two years, during which time they have visited the chief industrial centers of Europe, and their forthcoming report will doubtless embody a vast amount of valuable information of great interest to artisans and all others in the United States who would promote that national development which depends

so much upon the prosperity of the artisan class. I shall take the opportunity, if it is afforded me, of transmitting a copy of the report to the Department of State. I feel safe in assuming that the pottery industry will find therein intelligent and exhaustive treatment. I have in a former report (see Consular Report No. 9, p. 145) called attention to the art schools of this country as being something worthy of emulation in the United States, but I hope at no distant date to make these the subject of a special report.

EDWARD E. LANE,
Consul.

UNITED STATES CONSULATE, TUNSTALL.

PORTLAND CEMENT IN NEW ZEALAND.

REPORT BY CONSUL GRIFFIN, OF AUCKLAND.

The large increase in the quantity and value of cement imported annually into New Zealand, together with the keen competition amongst the various manufacturers of native hydraulic limes in the North Island, furnish very strong evidence of the commercial activity and substantial progress of this colony.

The total value of the imports of cement into New Zealand during the year 1873 was only $116,175. In 1879 it was $288,985, and in 1881 it was $498,445, and it 1882 it was $501,270, showing an increase of $11,725 over 1881, and an increase of $221,285 over the imports of 1879. The subjoined table shows the quantity and value of cement imported into New Zealand for each year from 1873 to 1882, inclusive:

Table showing the quantity and value of cement imported into New Zealand for each year from 1873 to 1882, inclusive.

Year.	Quantity.	Value.
	Barrels.	
1873	25,300	$116,175
1874	37,740	172,200
1875	54,536	200,340
1876	72,588	303,650
1877	50,303	251,015
1878	101,769	407,355
1879	70,439	288,985
1880	115,156	431,060
1881	138,197	498,445
1882	143,382	510,270

These imports consisted exclusively of what is known to the trade as Portland cement. The bulk of this cement was manufactured in England. The favorite English brands here are those of Knight, Bevan & Sturgis, the Victoria, Robinson & Co., White & Co., Francis, Son & Co., and others. Amongst the various brands imported in 1881 there were 100 barrels of the "Star" brand, Stettin, Germany, and in 1882 there were 90 barrels bearing the name of the National Portland Cement Company, of Kingston, N. Y. The average price of cement in Auckland is 16*s.* ($3.84) per barrel of 3½ bushels each. A good article of English cement will sometimes sell as low as 14*s.* ($3.36) per barrel, and when the demand is great and the supply is limited, it will bring as much as 18*s.* and 19*s.* ($4.32 and $4.56) per barrel. The duty charged on cement imported into New Zealand is 1*s.* (24 cents) per barrel. Previ-

ous to the invention of Portland cement, all concretes, including those used by the Romans, had lime as a cementitious constituent, and it is very generally admitted by scientists that the buildings constructed in ancient times were quite equal, if not superior, in strength and durability to those of the present day.

MODERN ROMAN CEMENT.

Modern Roman cement was invented by Mr. Parker, in 1791. He gave it the name of Roman cement under the impression that he had discovered the method used by the Romans in the manufacture of their mortar, but his impression was not a correct one. It is now known that the ancient Roman cement was principally made from pozzulolana, a ferrugenous ash from Mount Vesuvius, and other volcanoes. Modern Roman cement was first made from the septaria nodules of the clay formations of London. The stones from which the cement was made yielded the following analysis:

Carbonate of lime	6.90
Oxide of iron	0.37
Magnesia	0.02
Oxide of magnesia	0.12
Silica	1.80
Alumina	0.66
Water	0.13

This cement is of the same brownish color as that used by the ancient Romans, and possesses remarkable setting properties, but does not attain any special degree of hardness or strength.

PORTLAND CEMENT.

Portland cement has been in use about sixty years. It was first made by Joseph Aspadin, a bricklayer, in 1824, and called Portland cement, on account of its resemblance to Portland stone. Some time elapsed before its merit was recognized. The Germans were the first to discover its value by thoroughly testing it. In England it is manufactured principally on the Thames, the Tyne, and the Medway Rivers. The two essential ingredients are chalk and clay. The clay is obtained by dredging along the shores of the above named rivers. The proportion of chalk, or rich lime, varies from 60 to 80 per cent., and the clay from 20 to 40 per cent. The two ingredients are thoroughly mixed together until the whole is formed into a creamy mass. The water is then run off, and the substance dried and broken into lumps and then calcined by baking in ovens, after which it is ground into an impalpable powder and put in barrels and is then ready for use. The following table will show within a moderate divergence of range the analysis of the ingredients:

Lime	60.05
Magnesia	1.17
Alumina	10.84
Silica	24.34
Alkalies	1.54

AMERICAN PORTLAND CEMENT.

At one time vast quantities of Portland cement were imported into the United States from England, and the imports are still large, but the article is gradually being replaced by cements of home manufacture. The American Portland cement that finds its way to this market is very generally admitted to be superior to all others. It is seldom shipped here in large quantities. It is extremely probable, however, that the United States will soon be able to compete successfully with Great Brit-

ain in the cement market of the Australasian colonies. It l
pointed out again and again that every layer of the clay used in tl
facture of English Portland cement is composed of a different c
construction, and that as a natural consequence the cement v
quality with the different layers mixed. The American manuf
do not, however, labor under such difficulties; the chief excell
their product are its uniform quality and standard test grade
Henry Reid, a celebrated English civil engineer and the autho
eral valuable books on natural and artificial concretes, admits
American manufacturers are not wide of the mark when they
chalk and fine clay cements are unreliable, owing to the variable
of the clay used in the manufacture. He also says that the c
of obtaining the finest and best suited river muds or clay is b
more and more apparent. Should coal gas be superseded by
tric light, Mr. Reid thinks that the London cement makers will
other advantage in the increased cost of fuel now obtained
favorable terms from the gas works.

The best known brands of American Portland cement are the
ufactured in Ulster County, New York. At the International
tion at Philadelphia it was found that the average strength pe
inch of the cement made by the National Portland Cement C
Kingston, N. Y., was greater than that of any other manufactur
eral Gillmore certified to the fact that the tests were made by
the cement dry in each case with an equal measure of clean s
tempering the mixture with water to the consistency of stiff
mortar, and then molding it into briquettes of suitable form fo
ing the tensile strength on a sectional area 1½ inchs square, eq
inches. The briquettes were kept in the air one day to set,
mersed in water six days and tested when seven days old. A
taining the tensile strength in each case, the ends of the sp
were ground down to 1½ inch cubes, which were used the same
obtaining the compressive strength by crushing.

The subjoined table shows the crushing and tensile strengt
various kinds of cement experimented upon:

Name of exhibitor and place of manufacture.	Crushing strength.		
	Average strength per square inch.	No. of trials.	Average strength
PORTLAND CEMENT.			
	Pounds.		*Pou*
National Portland Cement Company, Kingston, N. Y	1,482	20	
Toepffer, Grawitz & Co., Stettin, Germany	1,439	12	
Holfick & Co., London, England	1,330	10	
Wouldham Cement Company, London, England	1,140	12	
Saylor's Portland Cement by Coplay Cement Company, Coplay, Pa	1,078	8	
Wampum Cement and Lime Company, Newcastle, Pa	968	12	
Pavin de Lafarge, Teil, Canton of Viviers, France	931	12	
A. H. Lavers, London, England	926	6	
Francis & Co., London, England	907	14	
Wm. McKay, Ottawa, Canada	882	10	
Borst & Roggenkamp, Delfzyl, Netherlands	826	12	
Longuety & Co., Boulogne-sur-mer, France	764	12	
Riga Cement Company, by C. X. Schmidt, Riga, Russia	693	5	
Scaman Cement Company, Lomma near Malmo, Sweden	606	14	
Bruno Hofmurk, Port Kund, Esthland, Russia	580	6	

AMERICAN TESTING MACHINES.

ıe recent European authorities on concretes express a decided ıce for the American method of testing cement work. The ın machines were the first to overcome the difficulty of bringing e to bear fairly upon the part to be tested. Mr. Reid in his ex- vork on "Portland Cement, its manufacture and uses," commends ghly Professor Thurston's testing machine. Mr. Reid states em- lly that as far as metals are concerned Professor Thurston's ma- ılly recognizes and measures every known strain, and proves cally their respective values. He says:

ing powers are almost unlimited, and indicate by an autographic registry gth, elasticity, limit of elasticity, ductility, homogeneousness, and resilience mitted sample.

ssor Reynolds, of Manchester, also declares the American method far the best in use. He thinks it is a question more of a test ın than of compression, and says that the whole result is shown essor Thurston's method.

NEW ZEALAND CEMENT.

are several companies now engaged in the manufacture of ce- New Zealand, and the product has met with such favor that it ırgely used in the construction of the public works of the colony. ector is of the opinion that New Zealand will not long be depend- oreign markets for this article. He has also great faith in the cement stones of the colony, and says that in some respects they e equal to those burnt for the manufacture of hydraulic lime in

I am indebted to Dr. Hector for the following table showing ıponent parts of the natural cement stones at Moeraki, in the sland, and at Amuri, in the South Island of New Zealand. nd 3 are analyses of the whole nodules, while Nos. 2 and 4 are the calcareous veins. The Moeraki stones are hard and com- a mottled gray color, specific gravity 2.655, hydroscopic water ent. The stones from Amuri are of similar character. Those ınd and France are given for comparison.

Obtained.	New Zealand.				Eng. Sheppey, land.	Boulogne, France.
	Moeraki.		Amuri.			
	1	2	3	4		
f lime	72.4	50.8	68.6	54.9	69.0	63.9
f magnesia	.3	.....	1.7	1.5	.....	.....
d iron oxides	8.7	7.6	6.5	6.4	10.5	12.3
a	.8	.....	1.0	1.0	18.0	15.0
ay	17.8	41.6	31.2	31.9		
	.6	.....	1.1	1.2	1.3	.6

NEW ZEALAND HYDRAULIC LIMES.

been reserved to New Zealand to combine a greater variety of s than any of the other Australasian colonies. In addition to gold, coal, and other mining industries, she is the first in the ıe production of wheat and other grain, and she has the largest

timber industry in the Southern Hemisphere, and her horses and cat and sheep are attracting the attention and admiration of the people distant lands, whilst many of her products, such as kauri gum, phormi tenax, fungus, and tanekaha bark, are peculiar to the colony, and a found no where else in the world. She was also the first of the colon to engage in the manufacture of hydraulic lime, and from the vast are of suitable material for this product in both the North and South Islan there is every reason to believe that this industry will soon be carried large proportions.

J. WILSON & CO.'S HYDRAULIC LIME WORKS.

There are now as many as four companies in the Mahurangi distr alone, engaged in the manufacture of hydraulic limes, the most ext sive of which is that of J. Wilson & Co., situated about two miles bel the township of Warkworth on the south bank of the Mahurangi ri in the provincial district of Auckland. This firm was the first to enga in the hydraulic lime industry in this colony. Lime was produced wh their works now stand as far back as 1851. They experienced gr difficulty in slaking the lime, and the industry was shortly afterwa discontinued, but was begun again in 1878. At that time they had o two kilns working at irregular intervals; now they have 18 kilns in operation, which turn out about three hundred and fifty thousa bushels of lime per annum. The supply of suitable stone accessible the works is practically inexhaustible. The stone is burnt as it con from the quarry. It is then taken to the crushing mills and reduced powder without being touched by water. The machinery consists of of Mottes' universal crushers. The rough lime is reduced to coa grit by the crushers and ordinary mill-stones. The fine lime produ is taken out with a sieve and placed under the crusher, and that wh is too coarse to pass through the sieve is put into the hopper and pas through the stones again, and sifted so as to produce a uniform arti The proprietors are not entirely satisfied with their present method grinding lime, and I have no doubt that the industry here could greatly improved by the introduction of American machinery for wo ing this product. Mottes' universal crusher is like a mortar with a bottom, and is so arranged that it can be raised or lowered at pleasu so as to reduce the material to whatever size is required. The pe is driven by an eccentric on its head, which produces an oscillat motion and crushes the stone against the walls of the mortar. The ki are all built of concrete, and lined with brick. They are 5 feet acr the top, tapering to 2 feet 6 inches at the base. Between each kil the top there is a wall 18 inches thick. The fuel and raw stones put into the kiln at the top and the burnt lime drawn from belo stated periods. The fires are kept burning all the time, except w the brick lining needs repairing. The heat is often intense enoug melt the brick, but it has no injurious effect whatever on the concr

The other hydraulic lime works are conducted on the same principle, that of Wilson & Co. has developed the largest trade, and, besides, t firm claims that the stratum from which their stone is taken differ chemical composition from all others found in the district. The stra is on an edge forming as it were a large reef striking west and ping at an inclination of 45 degrees north. The stone is soft and w exposed to the action of the weather soon falls into powder like a p of clay. When broken it fractures into thin flakes. Between th flakes is a greasy substance resembling black lead, which causes

stone to slide down without noise. There is no grit in the stone nor the slightest trace of fossils. The subjoined table, showing the analysis of lime made from this rock, has been furnished me by Mr. J. A. Pond, the colonial analyst for the Auckland district.

Analysis of ground rocke lime prepared by J. Wilson & Co., Mahurangi.

Silica and silicates insoluble in acids	18.20
Silica soluble in dilute hydrochloric acid	12.30
Iron per oxide	2.40
Alumina	5.90
Lime	60.32
Magnesia	.75
Alkalies	.13
Carbonic acid	1.00
	100.00

THE WARKWORTH CEMENT COMPANY LIMITED.

This company has recently enlarged its works in order to meet the steadily increasing demand for their product. Some of the heaviest structures in Auckland were erected on concrete foundations made of this lime. All these buildings have given satisfaction even when the foundations were laid on reclaimed ground to the depth of 16 to 25 feet and when the trenches were filled with water.

The following is an analysis of the stone found on the property of the Warkworth Cement Company:

Carbonate of lime	71.00
Silica and alumina and oxide of iron	34.20
Silicate of magnesia	1.00
Alkalies and moisture	3.80
	100.00

Some of the limestone in the Mahurangi district has also been analyzed by Dr. Hector, and I am indebted to that gentleman for the subjoined table:

Analysis of limestone from Mahurangi analyzed by Dr. Hector.

Carbonate of lime	68.78
Carbonate of magnesia	2.29
Iron and aluminum oxides	4.58
Siliceous matters	21.16
Water	3.19
	100.00

This stone is not wholly unlike that used by the Round Top Cement Works near Hancock, Md., as will be seen from the subjoined table:

Table showing the analysis of the stone used at the Round Top Cement Works near Hancock Md., U. S. A.

Carbonic acid	11.3
Silica clay and insoluble silicates	27.1
Alumina	1.5
Carbonate of lime	65.0
Carbonate of magnesia	5.3
Water and loss	.8
	100.00

Stones suitable for the manufacture of hydraulic lime are found at Raglan and various other parts of New Zealand. The layers at the Kaipara Flats occupy a large extent of country. The natural cement

stones near Whangarei and which also cover a large area, are worked by Mr. Decimus Atkinson, are said to produce the best cement used in the colony.

The New Zealand cements are more even in quality than the imported artificial cements from England. On the 29th of December last Mr. Pond made, at my request, an analysis of a fair sample of English Portland cement in order to show its condition upon its arrival here, and the following is his report of the same:

To G. W. GRIFFIN, Esq.,
United States Consul, Auckland:

SIR: I herewith forward an analysis of Portland cement taken by myself from a cask in Messrs. Winstone Bros.' store, Auckland:

ANALYSIS.

Silica and silicates insoluble in dilute acid	16.70
Silica soluble in dilute hydrochloric acid	6.50
Lime	60.48
Alumina	5.70
Iron peroxide	4.70
Carbonic acid	2.50
Sulphuric acid	1.13
Moisture	.20
Alkalies	1.30
Loss	.79
	100.00

I have the honor to be, sir, your obedient servant,

J. A. POND,
Colonial Analyst.

USES OF HYDRAULIC LIME.

The natural prejudice against all new materials for some time prevented the use of native hydraulic lime in the construction of important works in this colony. One of the first structures of importance in which it was used was a retaining sea-wall, 15 feet in height and 400 feet in length, erected at Mangonui, about three years ago, for the Auckland Timber Company. Mr. George Holdship, the managing director of that company, wished to erect a saw-mill at Mangonui, and found it necessary to build a large retaining sea-wall. The only material available, without heavy expenses, consisted of Wilson's hydraulic lime and the beach gravel or shingle so abundant in the neighborhood. The two ingredients were mixed together, one part of lime to six parts of gravel, and run into blocks of concrete of suitable size. These blocks were used for the foundation of the wall, and for that part extending above the action of the tide. The wall proved to be a great success and answered all the purposes of the very best stone. The result has been to make this lime very popular in the neighborhood. The following table shows the tests of Wilson's hydraulic lime for concrete and mortar:

Breaking tests on supports, 6 inches apart, seven-eighth inch round, bar placed across center.

No.	Description of material.	Age of block.	Time in water.	Size of block.	Broke on supports 6 inches apart.
1	Pure ground lime	32 days	30 days	2 by 2 by 9.	At 246 pounds.
2	do	7 days	5 days	do	At 110 bounds.
3	5 parts black scoria ash and 1 part ground roche.	62 days	60 days	do	At 206 pounds.

All these tests were carried out with ground roche used without slaking and set immediately after mixing and without pressure.

My attention has recently been directed, by Mr. John Milne, the secretary of the Warkworth Cement Company, to a building in Rutland street, Auckland, plastered with hydraulic lime made by that company. Mr. Kelly, who executed the work, is of the opinion that the Mahurangi lime answers all the purposes of Portland cement, and I noticed that the work exhibited a smooth, clean surface and that the leaves and moldings were firmly set.

The manufacturers of the Mahurangi lime do not claim that their product is equal to Portland cement, but it is well known that it will answer the purpose of about 90 per cent. of work done with cemen at a much lower cost. It will not set as quickly as Portland cement, but it will resist the action of fresh and salt water fully as well, and every part of it sets evenly and firmly. The competition of the various manufacturers has materially reduced the cost of hydraulic lime here. The following are the rates at which Wilson's Mahurangi hydraulic lime can be obtained in Auckland, with cartage added:

	Cents.
Ground roche, per bushel	52
Rough roche	30
Plastering	36
Slake	24

CONCRETES.

Various kinds of concretes are used in New Zealand. A good concrete for foundations and building purposes and bedding street tramways in use here is composed of 1 part of cement, 3 parts of sharp river sand, 12 parts of shingle or sea gravel of all sizes from 2 inches down to fine gravel. These all go into the bulk of 12 of the above parts, so that the proportion is as 1 to 12 of the finished work, or as 1 to 15 of the aggregate separately measured. The popularity of concrete for building purposes is shown by the large number of handsome residences in Auckland made of this material. The builders here recommend that in preparing the material every particle of the aggregate should be surrounded by a film of lime.

Concretes for different purposes require various sized aggregates, and to obtain the best possible results from any given quantity of lime the aggregates should be increased in regular order from coarse sand to 2½ inches, or from coarse sand to 2 inches, or from coarse sand to 1 inch, or from coarse sand to three-eighths inch. An aggregate graduated as described will make a perfectly solid mass, having the least possible surface to cover with lime. Aggregates mean the material to mix with lime to form the body of the concrete or mortar.

Various materials are used for aggregates. Red or black scoria, ash, burnt clay, river gravel, pit gravel, broken limestone, in fact any hard clean stone. Scoria, however, is regarded as the best material to be used, especially if it has been crushed, and moreover it can always be obtained in unlimited quantities. The fine particles of iron and lime found in it doubtless increase its value as an aggregate.

The frames used in building concrete walls in Auckland consist of a series of framed side-pieces of a width equal to the height of the wall intended to be built. These side-frames are arranged all round the building and are hooked on to vertical standards placed in pairs, one on each side of the wall. The side-frames and standards are kept apart to the extent of the intended thickness of the wall by distance-tubes of iron through which bolts pass holding everything securely. When the concrete is rammed in the frame and sufficiently set, each side is unhooked from the standards and rehooked one division higher. The standards are of various lengths, admitting of from four to six shiftings of the

frames. When ready to be moved the standards are unbolted and fastened at the next required height. The distance-tubes through which the bolts pass are inserted at regular heights, so that the standards can be moved when required. After the wall is finished the tubes are withdrawn. Many variations in detail occur, but the general principle is not changed. The walls should be carried up as near one level as possible. According to the instructions of Messrs. Wilson & Co., the only departure from this rule should be the depth of the building-frames. Each day's work should be finished at an angle of 45 degrees. This gives the builder an opportunity to shift up the frames filled the day before, so as to have them ready to refill when the men get back to the starting point. This process is repeated throughout, thus working it like a spiral stair, having no end until the last course is finished.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Auckland, N. Z., January 8, 1884.

THE ITALIAN COCOON CROP OF 1883.

REPORT BY CONSUL CRAIN, OF MILAN.

Although the statistics of the Italian cocoon crop of 1883 will not be made up before January 1, the officially registered sales in the principal markets afford a criterion by which to judge of that crop and compare it with those of preceding years. The sales thus registered represent ordinarily about one-third of the total crop, and the following are the figures for the four years 1880–'83:

Markets.	1880.	1881.	1882.	1883.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
Piedmont	4, 560, 930	5, 151, 250	4, 523, 610	5, 384, 940
Lombardy	980, 240	1, 203, 840	1, 009, 290	1, 070, 840
Tuscany	817, 240	920, 320	451, 940	859, 100
Umbria Marches	1, 036, 500	836, 150	840, 730	1, 054, 930
Rome	1, 323, 530	1, 702, 790	1, 381, 560	2, 087, 060
Naples	483, 060	417, 700	680, 990	191, 790
Venice	50, 390	34, 650	33, 370	62, 490
Total	9, 251, 890	10, 266, 700	8, 921, 490	10, 711, 150

It thus appears that the excess of such sales in 1883 over those of 1882 was 1,789,660 kilograms, or 20 per cent. This increase was principally in the central provinces and in Piedmont. The production of Lombardy is about the same as in 1882. I may be permitted to state some facts in regard to the Italian system of purchasing cocoons as explanatory of these registered sales.

In all the silk districts of the peninsula there are cocoon markets. These are most numerous where the production is greatest, but the affluence to the markets is most when the industry is weak and scattered. In the strong cocoon centers only small lots are carried to the market, the larger ones being sent directly to the mills or bought up by reelers on the spot. In the weak districts mills are wanting, and as buyers who go there cannot waste time looking up producers, local markets are a necessity.

Contracts for cocoons of new season begin to be made generally in April. These contracts are made by reelers who, either on account of local advantages, special facilities of payment, custom, or the necessity

of securing a certain portion of their stock so as not to take the risk of the market, are eager to make sure of the product of cocoons of some respectable proprietors, and generally of such as have their property close to the filature.

Contracts are made in two ways: One, the least resorted to, stipulates a fixed price. The other is based on a *fixed minimum* plus a premium averaging from 10 to 30 centimes per kilogram of cocoons. The fixed minimum is unalterable, even though the official average price established by the chamber of commerce of the head market of the province falls below it. If the official average is higher than the fixed minimum the premium is added to it, and if the official average is still the best of the two, the contract is established on the official average.

Cocoons come to market from the end of May to the beginning of July. All prices paid in the open market are unalterable, and these, with the fixed prices stipulated in contracts made before the crop, are reported to the local chamber of commerce, which appoints a committee to examine them and establish the official average. No notice is taken of contracts in which the price is subject to alteration. The committee is chosen from the most respectable buyers and sellers of the province; that is, from producers and reelers.

This system works well in provinces like Lodi, Novara, Brescia, Parma, and Cremona, where most of the parcels of cocoons are brought to the open market for sale, and where consequently the official average is based on a large number of sales. But in the province of Milan a small quantity only is sold in the open market, and the greater number of contracts, all made privately at prices subject to alteration or at fixed prices kept secret by agreement between buyers and sellers. The result is that the official average is established on a very small number of sales, and is often the cause of injustice. To counteract this, the Milan chamber of commerce has established the official average of the province by adding to its own reports the official averages of Lodi and Como.

There is a further objection, that the averages are not taken with regard to the district where the cocoons are made, some districts, especially the mountainous ones, yielding a much better quality of cocoons than others of the same province.

The producers hasten to deliver the cocoons, as soon as ready, to the reelers, who destroy the chrysalis in ovens. This is never done by the producer, unless he becomes a speculator, thinking that by holding he may at a future time realize a higher price.

The advantage to the reeler in buying of a producer near by is great as the cocoon from its nature is easily damaged by transportation and other causes.

The official average prices of cocoons of the last crop in four leading markets were as follows:

Markets.	Green cocoons.	Yellow cocoons.
	Francs.	*Francs.*
Como	3. 3580	3. 9031
Bergamo	3. 2680	3. 6933
Brescia	2. 9506	3. 8960
Milan	3. 1821	3. 9410

DUNHAM J. CRAIN,
Consul.

UNITED STATES CONSULATE,
Milan, November 20, 1883.

CONDITION OF PRINCIPAL INDUSTRIES OF LYONS.

REPORT BY CONSUL PEIXOTTO.

I beg to present the following report upon the principal industries of this consular district for the month of January:

SILK MANUFACTURES.

The business of throwing, weaving, and dyeing of silk has suffered in consequence of the decreased demand for plain goods. Figured and plain velvets have had an active trade. Cotton tram velvets of similar make to those of Crefeld have particularly been in large demand.

CHEMICALS.

Chemical works are in a fairly prosperous condition, though the exports to the United States have considerably fallen off compared with previous years. Lyons is noted for her superior dyes. Silk is sent from all parts of the world to be dyed in the celebrated works here. Piece-goods are also received at Lyons from different countries to receive the "finish" which the Lyonnais have such a marvelous art of imparting.

MISCELLANEOUS.

Boot and shoe factories are doing well; felt and straw hats poorly; iron manufactures of higher class are dull; glasswares find a lively trade; gas-fixtures and candle-factories are very active; goldsmiths and jewelers have no cause to complain, but gold and silver melting could be more active. Button makers have been particularly busy, fashion favoring the consumption; and this is equally true of trimmings and laces. Brass goods, pocket-books, oils and lubricating compounds, church ornaments, and cloth printing show a considerable improvement.

There are several very large tanneries in Lyons, and the leather trade has become an important feature; the shipments to the United States have tripled in the past two years, and the trade is constantly augmenting.

House-building and all the branches connected with construction of new edifices continue very active. A very large number of dwellings have been constructed during the past year and are in course of building.

The cotton factories are in a prosperous condition; the temporary admission of English cotton thread free of duty has given great activity to this branch, especially those employed in manufacturing cotton and silk goods, which has become a large industry.

BENJAMIN F. PEIXOTTO,
Consul.

UNITED STATES CONSULATE,
Lyons, February 6, 1884.

INTERNATIONAL ELECTRIC EXHIBITION OF VIENNA IN 1883.

REPORT BY CONSUL-GENERAL WEAVER.

The International Electric Exhibition, which was opened on the 16th day of August last in the Rotunda, closed on the 4th instant, after having remained open to the public for eighty-one days. The success attending the exhibition was exceedingly gratifying to all connected therewith, surpassing, it is affirmed, in size and interest those held in Paris and Munich in 1881 and 1882.

The number of exhibitors was 575, embracing many foreigners; the number of cases received from foreign countries was 5,747, weighing 772 tons, besides 400 packages of small dimensions received through the packet post. All these articles were entered free of duty, except when sold and left in the country.

The exhibits embraced every class of objects necessary to illustrate or embody electric principles, as well as such as served to show their application. They consisted principally of electric machines, cells, piles, batteries, accumulators, telegraphs, telephones, microphones, scientific apparatus, lights, signals, cables, wires, conductors, collections, books, and every conceivable appliance for the application of electricity.

The total number of paying entries aggregated for the eighty-one days 886,323, being an average daily attendance of 10,942 persons. The exhibition remained open daily from 10 a. m. to 5 p. m. and from 6 to 10 p. m. The entry price was 40 kreuzers, or 10 tickets for 3 florins, except for Sundays and holidays, when the price was reduced to 30 kreuzers; children under ten years of age, half price.

The aggregate receipts were nearly 300,000 florins, leaving a deficit of about 25,000 florins. The European nations, almost without exception, were represented by official commissioners and delegates, some of them, particularly Russia and France, including those delegated by the several departments of the Government, having as many as ten and fifteen members. The United States was represented by Lieutenant McLean, delegated by the Navy Department; but while many exhibits bore the names of well-known authorities in electric matters from the United States, these were generally exhibited by agents residing in Europe, to the end that, while the United States furnished much of great value and interest, she received publicly but a small part of the credit due to her.

The following are some of the prominent features of the exhibition which attracted general attention, viz: The electric railway, plying over a distance of 2 kilometers, between the Praterstern and the Rotunda, became from the first very popular, carrying, from August 28, 269,050 paying passengers, or about 3,900 daily. The success attending this line has proven so satisfactory that the project of erecting an elevated electric railroad in the city is now being seriously discussed.

The applications of electric light to domestic use, art, industry, and decoration were greatly admired. A large number of drawing-rooms, picture galleries, &c, were exhibited, showing the effect of the Edison and other systems of lighting. This feature of the exhibition proved a great attraction. A theater was also erected in the Rotunda to illustrate the marvelous effects wrought by electric light, and both spectators and

artists were delighted with the result. There can, therefore, be but little question of the general adoption of electric light for the purpose of producing scenic effects at an early day, such light being in every way the best, safest, and most convenient, although possibly for the present and many years to come it must continue more expensive than gas. Nevertheless this objection cannot prevent its adoption in these days of progress and increased demand for comfort and luxury, particularly as most of the theaters in Europe depend more largely for success upon royal subsidies than upon their ability to balance their exchequer or pay yearly dividends. Consequently the new theater at Brunn is lighted by electricity, and the new Burg Theatre at Vienna will follow its satisfactory example.

The numerous accumulators which were exhibited for the purpose of illustrating the so-called "storage" of the electric force were of great general and special scientific interest, and, although apparently a misnomer, since it would appear that the electric current is not stored, but that only an abnormal condition is set up in the wire plates of the reservoir, which returns to a normal when the electric circuit is established, yet the results obtained are such as greatly to modify the question and make it possible now to employ electric light and forces where, only a few years ago, their employment was regarded as an impossibility.

For instance, an electric lamp was exhibited attached to the end of a carriage-tongue and supplied by an accumulator in such a manner that at the will of the driver it could be illuminated by simply touching a button conveniently located by his side.

Again, the transmission of power was illustrated practically by driving the large center fountain in the Rotunda by an electric current, transmitted through two small copper wires for a considerable distance (probably 200 yards) without apparent great loss of force, and it is affirmed that the distance may be extended almost indefinitely, although with great loss of power, and that it has been practically demonstrated that a forty-horse power current has been transmitted for 15 kilometers, although at that distance the force was reduced to from seven to ten horse-power. This, however, would permit the utilization of water-falls and running streams, whereby a cheap motive power could be obtained, even after a great loss of power by transmission. This would doubtless remove the greatest barrier to the general employment of electric force, namely, its cost; for if the expense attending the generation of electricity could be materially reduced by procuring a cheap motive power, its application to many industrial and commercial purposes would result where now the same is regarded as impracticable; consequently a cheap motive power is the electrician's first desideratum, while the transmission and storage of the electric current are concurrent important problems demanding solution at their hands, since the latter stand in close connection with the former.

The establishment of numerous telephones in connection with the exhibition, where the public on the payment of a small fee might enjoy a practical experiment of its uses, supplied an instructive diversion to the public and a profitable investment for the parties conducting the same. Several public music halls in the city and suburbs, such as the opera, skating park, and concert rooms, were put in connection with the rotunda where those desiring might enjoy the novelty of listening to music and conversation transpiring several kilometers distant, and in one instance where the voice was located at a distance of over 60 kilometers from the accompanying piano. The effect was very wonderful indeed, and shows that, although telephonic science has made giant strides in

the past few years, we are yet only upon the threshold of its startling mysteries and wonderful results.

The appearance of the exhibition at night when hundreds and thousands of lights, large and small, illuminated the great space of the rotunda to a brilliancy equal to daylight, was most beautiful. The effect was enchanting. The busy throng, the whir of machinery, the clanging of bells, the rush of the fountain, and the gleaming of the lights, had it not been so actual and so real, would have led one to imagine he was suddenly transported into a fairy magic world. In all, the exposition was a great success. Although no medals were granted, juries, experts, societies, and celebrities visited and examined the various objects in detail. Public lectures on practical topics in reference to electricity with experiments were given, explanations and discussions formed prominent features of the exhibition, to the end that the public had a fine opportunity, which they eagerly embraced, of familiarizing themselves with the effects and applications of electricity which will result in creating greater confidence and increasing the desire to adopt the new agent as a motive power in industry and manufacture. While on the other hand, doubtless, scientists and electricians in particular realizing more keenly the great desiderata to complete success, are better prepared to push forward to completion the solution of their difficult task of discovering some method yet unknown of producing a cheap motive power, without which a general practical application of electricity must remain in abeyance, or be adopted to only a limited extent. For although electric light and various successful appliances of electricity cannot fail to surprise and delight every beholder, yet the temperate and candid electrician cannot fail to recognize that while much has been done, much remains yet to be done before he can inscribe upon his escutcheon, with confidence and with reason, the magic word "Eureka." In the hope of approaching still more nearly the desired goal, all eyes are turned toward the next international exhibition to be held in Philadelphia, in 1884. That it may not fall behind its predecessors in interest or in advantage is a "consummation devoutly to be wished."

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, November 24, 1883.

HISTORICAL EXHIBITION AT VIENNA.

REPORT BY CONSUL-GENERAL WEAVER.

On the 14th instant was closed the historical exhibition which had been opened on the 12th of September last in the new Rathhaus (city hall) of Vienna, in commemoration of the bicentennial of the raising of the siege by the Turks in 1683. It will be remembered that the grand vizier, Kara Mustapha, with a large army, flushed with victory and re-enforced by the dissatisfied Hungarians under Count Tokoly, beleaguered Vienna from the 14th of July to the 12th of September, 1683. Emperor Leopold I had fled, and the defense of the city was left to its heroic inhabitants. The French King, Louis XIV, embraced the opportunity to intrigue for his own advantage, while the folly and cruel oppression of the Catholics had estranged the sympathy of not only the

Hungarians but the Protestants of this Empire and the princes of Northern Germany. But the arrival of the Moslem hordes around Vienna, with the prospect of an unrestricted advance into Christian Germany in case Vienna should fall, awoke the Polish King, John Sobieski, the Margrave Louis of Baden, and other German princes to the realization of a mutual danger, who, collecting an allied army of Poles, Austrians, Saxons, Bavarians, and others, on the 12th day of September, 1683, fell upon the Turks and defeating them utterly raised the siege of Vienna, which by this time had been reduced to the most dreadful straits of want and suffering. This was the second and last siege which Vienna suffered from the Turks, the first having occurred in 1529, when Sultan Soliman, after the capture of Buda-Pesth, threw his powerful, victorious army upon Vienna and closely beleaguered it from the 27th day of September to the 18th day of October. After repeated assaults and fearful loss of life, however, the Sultan, on account of the heroic defense of the people of Vienna led by the brave general, Count Salm, was compelled to abandon his cherished design.

Under the circumstances, therefore, one can readily appreciate the just and commendable zeal with which the city of Vienna entered upon the celebration of the bicentennial of their last deliverance from the Turks, especially as the time corresponded with the official opening of the large and beautiful city hall which had been erected on the very spot where once stood the Turkish redoubts and forts, from which were hurled upon the devoted city hot shot and every description of deadly missiles.

The exhibition consisted of relics of the siege, arms, tents, portraits, literature, &c., gathered from every possible quarter to a surprising extent and variety. The entry fee was fixed at 10 kreuzers by day and 60 at night, when the whole was lighted by electricity. Hundreds of thousands visited the collection, until the proceeds surpassed the expenses by some 50,000 florins, consequently the success attending the exhibition has given great satisfaction to the authorities and people of Vienna.

The City Hall, whose opening gave additional interest to the exhibition, is a magnificent Gothic structure of great dimensions, costing fourteen million florins. The architect is Frederick Schmidt, whose name is connected with some of the finest architectural monuments of Vienna and Europe. He was born in Würtemberg in 1825, the son of a Protestant clergyman, whose father, however, was an architect of considerable renown. The erection of the City Hall had occupied eleven years, as the first spade had been struck May 15, 1872. The style of the building is neither pure Gothic nor Renaissance, but a modification of both to suit its secular design, being as Schmidt himself says "the spirit of the age," in the true sense of the words—the style corresponding with the design, and the effect such as to awake the admiration of every beholder.

On May 22, 1868, the city council offered prizes for plans for the new hall. The competition became international and sixty-three projects were submitted; of these, forty-one were by Austrians and Germans, eighteen by Frenchmen, and four by Italians. The jury consisted of three Austrians and two foreigners. The prizes amounted to 28,000 florins, of which the first was adjudged to Schmidt.

The locality of the spacious Rathhaus is close to the Ring, facing the imperial palace, on ground redeemed from the destruction of the old walls in conformity with the decree of Francis Joseph, pronounced in 1859; and with the new adjoining Reichstrath, Burgtheatre, University,

and the intervening park, it forms one of the finest prospects that Europe can afford, whether considered æsthetically or architecturally. Vienna owes her present wonderful development in municipal and governmental buildings to the great good tact and wisdom of the present Emperor, by whose decree it was determined to devote the money received from the redemption of the grounds formerly occupied by the city walls to the erection of public buildings instead of squandering the same in a bootless legal conflict between the various imperial, national, municipal, and military authorities making claims thereon.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, November 17, 1883.

BEET-ROOT SUGAR INDUSTRY IN GERMANY.

REPORT BY CONSUL KIEFER, OF STETTIN, ON THE ESTABLISHMENT OF A BEET-ROOT SUGAR FACTORY IN STETTIN, AND ON THE GENERL BEET-ROOT SUGAR INDUSTRY OF THE EMPIRE.

EXPORTS OF BEET SUGAR TO THE UNITED STATES.

I have the honor to report to you the establishment of a new beet-root sugar factory near Stettin, to be called Zuckerfabrik Schenne. Considering the importance this industry already has obtained (existing only since the beginning of this century), the constant and rapid increase of it from year to year, the material part it takes in augmenting national wealth, the new and remunerative employment it gives to thousands of men, particularly during winter time; the large profits it yields, as well to the farmer as to the manufacturer; the considerable amount of taxes it pays to the Government, and last but not least, the beginning of export of raw sugar to the United States—the home of the sugar-cane—it may well be worth while to pay attention to a new enterprise of this kind in our close neighborhood.

THE INDUSTRY IN POMERANIA.

It is only a short time since the beet-root has been introduced into Pomerania, the principal districts in Germany for its cultivation nearly exclusively having been the Prussian province of Saxony (Magdeburg being especially known for it), Silesia, Hanover, Braunschweig, and Anhalt, these producing together 78 per cent. of the total production of crude sugar.

During the last twelve years some factories in Pomerania have been erected, which are paying a very liberal dividend—from 60 to 100 per cent.

ESTABLISHMENT OF A FACTORY IN STETTIN.

Towards the close of last year the project of establishing such a factory near Stettin was discussed; and the preliminaries all having been fulfilled, the organization of the company, Zuckerfabrik Schenne, took place January 28 of this year in this city.

According to the statutes, the capital stock will consist of 900 shares of 500 marks each, making a total of 450,000 marks, with power given

to the board of directors to increase the capital to 750,000 marks event ually.

The shares are either beet-root shares, so called, or cash shares. Ther are 614 of the first kind, representing 307,000 marks, and 286 of th other class, representing [illegible] marks, all the shares having been sub scribed for, and [illegible] per cent. as first payment, has already been paid in only 10 per cent. more besides the first payment of 10 per cent. will b asked in cash of the shares, the so-called beet-root shares; the balanc due of 80 per cent. will be compensated by a deduction of 20 pfennig per centner of the roots to be delivered. By this very ingenious plan the company, as will be seen at once, secures at the same time capita and raw material at a reasonable price for running the factory.

The business of the company is managed by a board of directors an a board of trustees and the general meeting of the shareholders.

Each director must hold at least [illegible] marks in shares, which he ha to deposit with the trustees as surety.

The total expenses for putting in running order are estimated a 797,937 marks, equalized by an income of [illegible] marks on shares an a mortgage to be given for [illegible] marks, leaving 152,063 marks fo carrying on the business.

It seems to me that the whole plan has been well considered, is base on sound principles and is resting upon a very solid foundation.

THE BEET-ROOT INDUSTRY OF THE EMPIRE.

In order to show the importance of this industry to our farmers an capitalists more clearly and conclusively, I inclose a report concernin the manufacture and taxation of beet sugar in Pomerania and the state belonging to the German customs for the year from August 1, 1882, t [illegible] as also a [illegible] for 1883–84, published by the Im [illegible] and reprinted in the New Stettiner Zeitun [illegible]

[illegible] which the following is a synopsis, it appear [illegible] German sugar was shown first in th [illegible] thereof for favoring and promoting it [illegible] the taxes paid on sugar manufact [illegible] the tax was levied by an assessment o [illegible] and the drawback calculated according t [illegible] it happened that gradually, in a [illegible] was paid for sugar to be exported, viz: It wa [illegible] that [illegible] centners of beet-roots wer [illegible] the centner of beet-roots paid 8 [illegible] were returned for crude sugar to be ex [illegible] of manufacture and better cultivatio [illegible] during the last twelve years only 11.39, an [illegible] and [illegible] centners respectively o [illegible] crude sugar, and so there was pai [illegible] crude sugar a tax on 1.10 to 2.04 centners o [illegible] been paid for, being in fact equal to a pre [illegible] was that the manufacturer [illegible] to send their product abroad, and in 188 [illegible] alone an export of crude sugar t [illegible] in 1882 for $127,818; and in 1883, fo [illegible] to be increased during the next years.

[illegible] things a commission on sugar tax wa [illegible] in session yet, and reduced as a tem

porary measure the drawback 40 pfenning on each centner of sugar for two years.

During the time it is hoped the commission will have finished its labors and will have reached a final result.

The tax on beet-root sugar amounted in 1871–'72 to 36,014,691 marks; duty on imported sugar, 12,498,225; drawback on exported sugar, 3,875,916; net income, 44,637,000; in 1882–'83 beet-root tax, 139,954,448; import duty, 1,730,108; drawback paid, 73,507,595; total net income, 68,176,961 marks. To those taxes to be refunded must be added those that have not been actually paid out yet, being due only after six months, leaving in fact only a net income for 1882–'83 of 51,643,686 marks or 1 to 13 marks per head against 1 to 15 in 1871–'72.

The development of this industry in Pomerania during the last twelve years shows itself best by comparing the figures of 1871–'72 with those of 1882–'83.

Years.	Roots consumed.	Crude sugar manufactured.
	100 *kilos.*	100 *kilos.*
1871–'72	378. 223	32. 106
1882–'83	841. 245	77. 209

In addition has to be mentioned the Provincial Sugar Manufactory's refining establishment which increased the refining of raw beet-root sugar since twelve years continually and steadily from 105,203 double centners in 1871–'72 to 165,872 double centners in 1882–'83 without using any sugar-cane or colonial sugar during the whole time.

The total result of the fiscal year 1882–'83 shows an extraordinary increase of production compared with the last year's, caused partly by the establishment of new factories and the enlarging of those already existing, partly by cultivation of the beet root on a larger area, and principally by the unusually rich harvest of those roots.

There were 358 factories in operation, an increase of 15 compared with the preceding year, which produced 8,351,646 double centners of crude sugar against 5,997,222 the preceding year, and paid 139,954,448 marks taxes against 100,351,163 marks in 1881–'82. For the fiscal year 1883–'84 there will be in operation 373 factories, another increase of 15 over 1882–'83.

The revolution which has taken place since twelve years in the German sugar industry becomes most apparent by comparing the principal dates of 1871–'72 with those of 1882–'83.

Quantity of roots raised, from 22,509,182 and 87,471,537 100-kilograms.

Quantity of crude sugar produced, 1,864,419 and 8,351,646 100-kilograms.

Quantity of roots needed for producing 1 kilogram crude sugar decreased from 12.07 kilograms to 10.47 kilograms.

The import of all kinds of sugar tumbled down to 66,012 from 496,332; the export increased from 142,757 100-kilograms to 4,725,514 100-kilograms, and the home consumption from 5.5 to 8.1 kilograms for every single inhabitant.

THE BEET-ROOT INDUSTRY IN THE UNITED STATES.

If I look at these astonishing results I cannot help thinking that in the cultivation of this root a new and large field of enterprise and prosperity would be given to our American people, and the object of this

dispatch is to call the attention of those whom it may concern to this very important matter.

Climate and soil in many States, as for instance, in Michigan, Wisconsin, Iowa, Minnesota, are particularly fitted for the culture of sugar-beet, and one hundred thousand acres lying idle now, if planted with it would yield a rich harvest; thousands of men would get work in the factories needed for gaining the sweet juice, and for manufacturing the sugar; the genius of the American people would contrive without doubt in a short time new machines and processes to make this wonderful industry even more profitable than it is in Germany; the time will come when the beet root will be for the North what the sugar-cane is for the South, and sugar factories replace within the Northern States the cotton mills now springing up in the South, and the wealth of the nation will be increased materially, not only by adding a new industry to the country, but also by saving hundreds of thousands of dollars now annually sent abroad.

HERMANN KIEFER,
Consul.

UNITED STATES CONSULATE,
Stettin, February 2, 1884.

COMMERCIAL MUSEUMS AND SAMPLE-ROOMS.

REPORT BY VICE AND DEPUTY CONSUL DEZEYK, OF TURIN.

If it cannot be brought into doubt that the Department of State was the first among all foreign offices to transform the American consular service into a vast institution which, abounding in projects proper to each particular district, sensibly helps the expansion of American trade to the remotest parts of the globe, neither can, on the other hand, the truth of it be contested that, on the very morrow of our awakening to such practical measures as elicited the just encomiums of the European press and appealed to the national pride of every other consular corps, we were not only entirely imitated, but if possible surpassed in every effort tending to the development of our commerce; for proof of which I need only refer to the solemn opening (last April) of the Commercial Museum at Brussels, as well as the following abstract of an article by Thomas Grimm in the Petit Journal of Paris (September 9) under the title of "Commercial Museum":

"The more I go [he says] to the bottom of studies on competition the more I find that all sorts of foreigners, especially Germans, come to us to learn our trade and to glean the secrets of our manufacturers, and then return home to exploit our processes and go offering over the world articles superior to our manufactures. We have not only said but proven that the Government was much concerned about the situation brought about by this reckless competition. All competition is legitimate when it is honest, but when it is dishonest we are powerless and will remain so as long as there will not be an international recognition of trade-marks and industrial types. I like to believe that such cases are exceptional. From official documents published by the minister of commerce and communicated to the several commercial syndicates it results that German commerce of late years has made considerable headway, to the detriment of ours, in several Central American and even in North American States. All goods destined for those countries are shipped via Hamburg. The inferiority of our export trade with Chile, Peru, Venezuela, and Mexico is mostly owing to the want of traveling agents and of the representation of the French commercial firms, while German commerce is duly represented in every Spanish colony. Their traveling agents [illegible] the principal centers in the interior and ports on the coast; they soon enter

into relations with the natives, find out the style and taste of the people, and obtain without much trouble orders on presentation of their samples.

This state of things has naturally spurred on the initiation by our legislature of a project of great utility, which has met with the consent of the ministry of commerce towards the creation of "consular and commercial museums," which the Government is disposed to sanction, also samples should be collected for this museum, the usefulness of which is self-evident, of all foreign goods, wares, and merchandise, which stand any ways in competition, with our own products of exportation. The merchants and manufacturers could thus study the articles manufactured abroad, and endeavor to improve their style and to manufacture them cheaper. It is not necessary to insist upon the importance of this plan, the result would be a guide and a powerful stimulus for French manufacturers. By these means more important operations would be ventured on, and new outlets would be opened for us, especially if, as everything leads us to believe it, our consuls will enter the new path towards which they are pushed, and will become the friendly advisers and loyal agents of the French residents.

The creation of a consular colonial museum, although an excellent idea, is not quite adequate; if the museum is established at Paris only, how do they want it to serve the generality of merchants in France? A journey to Paris is expensive, and takes up considerable time. What is needed is, that every commercial center should have its museum placed under the direction of the chamber of commerce on the principle of private enterprise. Finally there is a measure which the ministers of foreign affairs and commerce are willing to inaugurate—the gathering of statistics of the French commerce abroad. This would allow the producers to get acquainted with the residence and specialties of the various firms to whom they could give orders and send samples. These relations were entirely wanting heretofore, and they would prove very advantageous for business transactions. Let us mutually help and protect each other; nothing is yet to be despaired of or even compromised. We have overslept ourselves a little, and the awakening is a disagreeable surprise, but it is not impossible to resume our forward march with energy, and to overtake and even pass our rivals and competitors.

Thus, you will observe, the French are not satisfied with our plan of such sample rooms of American goods on the continent as Messrs. Strasburger & Co. have established at Hamburg and Coburg, but they go one step further and wish to have consuls to collect samples of all goods and manufactures generally used in their several districts, and to send them home to France as models to perfect, or at least to manufacture by them French goods to be imported into said consular districts; and still further, they want their sample room filled with such models as consuls can collect to be established not only in Paris but in several centers, that is to say, in all the French manufacturing cities; and even beyond all, Mr. Grimm recommends the compilation of commercial statistics of all French goods sold abroad, with the names of the firms or companies who actually bought or who might be apt to purchase them, as a means of establishing a direct intercourse between the consumer and producer.

One is almost out of breath to follow the wholesale arrangements by which Mr. Grimm wishes to inform French manufacturers how to supply consumers the world over, wherever there is a French consulate located, with French goods. If we want to reach similar ends to those towards which the French and other people are forcing their way, we must employ new expedients for the final settlement of the knotty question of how to find new markets for our overproduction.

The Department of State can, in my humble opinion, come freely forward and lay before Congress the whole plan, with its wonderfully well adapted details, of a commercial museum for each of our larger commercial centers, say, as is clearly exhibited in his able report of July 11, 1882, by Consul Wilson, showing the whole working of that first museum in Europe, which the Belgian chief of state personally opened at Brussels. It can confidently assure Congress of the beneficial results it would bring to our foreign trade to have articles of importation judiciously selected on the markets of every corner of the world and sent

to such museums by our consuls, the samples of these staple articles serving as models: their style and pattern could be easily adopted by our manufacturers, and, freight and labor not preventing it, transformed into current articles of steady demand, would vivify our industry, prove of inexhaustible richness to our manufacturers, and become the never-failing means for vigorously pushing our export trade.

Let it be remembered that the Department, possessing in its consular force the best element, as regards serviceability, economy, and reliability, to gather the best material and otherwise to furnish information or suggest new ideas, would be the proper medium through which such museums could be established and directed to the satisfaction of every merchant and manufacturer in the United States.

A. J. DE ZEYK,
Vice and Deputy Consul.

UNITED STATES CONSULATE,
Turin, October 30, 1883.

LABOR AND WAGES IN DUNDEE.

REPORT BY CONSUL [illegible] OF THE SOCIAL CONDITION OF THE WORKING CLASSES—LABOR, WAGES, FOOD PRICES, RENTS, ETC.—IN DUNDEE.

From careful [illegible] it has been ascertained that the average wages of the working people in this town is for skilled artisans $6.87 per week of 54 hours' work, in the case of ironworkers, and 51 hours for tradesmen connected with [illegible]. Laborers get $4.75 per week of 57 hours. There are [illegible] that make more money weekly. For instance, [illegible] whom at piecework are paid from $11 to $1[illegible] and [illegible] as boilermakers, who have about $8.50. The earnings [illegible], as the average, are considered very near the mark. [illegible] works women in the spinning-mill department [illegible] and in the weaving factories $3.50 of wages [illegible] labor. These working people on the whole [illegible] the way of house accommodation. There [illegible] only one room each, in which there is a [illegible] houses of two rooms, into which are [illegible] and children. If to these be added the [illegible] the people living in them, it shows that [illegible] of this community live in houses of [illegible] per year of these houses, which are in [illegible] rooms, including all taxes and convenience [illegible] upholding gas, $77.50, and for one of two [illegible] are engaged for the year, and rents are pay[illegible] single-roomed houses are from 60 to 75 cents [illegible] weekly. As shown, a large portion of the popu[illegible] center live in houses of one room and [illegible] upon these denizens the devastation of [illegible] entirely falls. Statistics proving that amongst [illegible] the deaths from fever in this town take place.

[illegible] this year 157 per 10,000 were attacked by infect[illegible] more than 12 per 10,000 died. But among [illegible] and two rooms 183 persons per 10,000 were [illegible] more than 16 per 10,000 died, while among the whole [illegible] including the people in the three-roomed

houses, 101 per 10,000 were attacked, and only 4 per 10,000 died, showing clearly that the one and two-roomed houses are great nurseries of disease. Many of these single-roomed habitations are wretched in the extreme, containing little furniture, and occasionally are without even a bed. In some of these hovels five or six human beings are sheltered, with nothing to lie on but the floor, and covering themselves, when they have the opportunity, with jute burlaps, which they take in to make into hand-sewed bags. The sanitary authorities of this town do a great deal to cleanse and purify the entrances to, and vicinity of, these vile dens, so that they may be kept healthy, but without success, as they continually prove to be prolific sources of all sorts of contagion, which sometimes spreads with virulence throughout the whole community. There are here and there in Dundee large and well-constructed tenements erected in airy localities, in which working people can live with some degree of comfort. Such homes are, however, not so numerous as is desirable, and the general appearance of many of the dwellings is cheerless and squalid, with no bright surroundings, and wanting in ventilation and proper sanitary convenience. It is surprising, considering the way human beings are thus huddled together, without anything like an adequate supply of fresh air and often light, and in the midst of a polluted atmosphere, that these poor creatures continue so vigorous physically and cheerful as they are. This melancholy state of matters, it must be admitted, is not due altogether to the dire poverty of the people, but is, undoubtedly, in a great measure, the result of improvidence in spending much money for intoxicating liquors. It is stated that $1,500,000 worth of spirits and beer is annually consumed in this town, too much of which sum, it is said, is contributed by the toiling masses, who ought to be more careful of their scanty earnings. Apart from the incalculable amount of degradation, misery, and vice that intemperance entails on many of these poor people, they cannot afford thus to squander their hard-won money, but should rather devote it to procuring that which would render their homes more pleasant and habitable. Although habits which are not commendable characterize a portion of the working classes of Dundee, yet it is satisfactory to have to report that there is a large section of them prudent, economical, and thrifty, and who manage to save money, as shown by the figures of the Dundee Savings Bank, chiefly resorted to by them. In 1882 this institution, the funds of which are guaranteed by Government, had 22,544 depositors, having at their credit $3,232,815. That year there was paid in $1,408,220, and paid out $1,259,820, showing a gain of $148,400. A few of these workingmen have sufficient means to purchase a house for themselves, instead of renting one, but this is seldom done. Scarcely any working tradesmen in Dundee possess homes of their own, on account of ground being so expensive within the town's boundary, and to build in the suburbs would be inconvenient, as being too far removed from the workshops. A pleasing feature to be mentioned is the large number of old, tried, and faithful employés which are numerous amongst these working people.

Men, and women as well, who have been in the same employment for twenty or thirty years are not uncommon in Dundee. Sober, intelligent, reliable, and decent servants are respected, esteemed, and their worth duly appreciated by employers here, who exert themselves to provide abundant and steady labor for such. Young people of both sexes can readily obtain employment in the jute and linen manufactories here. Dundee, therefore, attracts workingmen with families from surrounding small towns and rural districts. Boys and girls under fourteen years of age are engaged in these mills as half-timers, getting 60 cents per

week for 28 hours work and education for two hours daily in the schools connected with the mills. Those above that age are eligible for full-timers, and so can make the average wages already noted. Thus the joint earnings of a family enable them to live pretty comfortably, and to be well clothed. Indeed, it is noticeable that these respectable working people are nicely and warmly clad. Many of the factory girls overstep this medium and are expensively and fashionably dressed on Sundays or holidays. There are ample facilities for education and self-improvement in Dundee. Schools ably conducted are numerous and provided with everything appertaining to the imparting of instruction in all branches of knowledge. Still a large number of the rising generation are growing up in ignorance and crime through not attending these institutions for elementary learning. Parents are occasionally summoned before the sheriff's court and punished by fine or imprisonment for neglecting the education of their children. The invariable excuse of these delinquents is that they are so poor that they do not have the wherewithal to pay the 7 to 12 cents per week demand for teacher's fees, or are unable to furnish their children with clothes to properly appear in school. In some cases these pleas are too true, especially with widows or those in distress.

The school board try to alleviate these unfortunate people as far as possible by collecting clothes or money with the object of dressing the children. This, however, is only but a very partial remedy for the evil.

Free education, as in the United States, is what is required as a means of reaching the children of the whole mass of the population, so that every child may have a chance to be taught to read and write, and thereby be more likely to become worthy citizens and responsible members of the body politic. The inhabitants of Dundee have a free circulating and reference library and reading room, in which are upwards of 30,000 volumes. It is true that the kind of literature mostly read is of a light nature, such as novels, books on travel, magazines, &c. Works of a higher literary character and of a scientific and educative tendency, which abound in this collection, are, however, becoming yearly more sought after and taken out by the general readers, which is an evidence of a higher tone and taste prevailing. The wealthy in this community show praiseworthy public spirit and generosity in giving freely of their means for recreation parks, educational and general philanthropic purposes to benefit their less fortunate citizens. A rich lady still living has munificently gifted $650,000 to build and endow a university college in Dundee, which was opened a week or two ago with great *eclat*. Also, a gentleman, recently dead, donated during his lifetime upwards of $250,000 for educational and benevolent schemes.

CLOTHING AND FOOD PRICES.

The price here for a good, well-made, ordinary suit of tweed clothes, usually worn by workmen, when dressed, is $17. Coats can be bought for say $9; waistcoats, $3.50; trousers, $4.50; and strong boots for $4. The cost of the necessaries of life for fairly superior qualities is for a four-pound loaf of wheaten bread 14 cents. In cents, the value of the pound of butter is 30, of sugar 7, tea 75, coffee 40, ham 24, oatmeal 3¾, American flour 4, European flour 3¾, fresh beef, home fed, 24; American fresh beef, 16; mutton, home fed, 20; rice, 4; cheese, American and European, 14; codfish, salted, 5; potatoes, 1; pork, salted, 12; American canned meat or beef, 19; milk, per pint, 4; and eggs, per dozen, 26. The food of the working classes is simple and homely, consisting of, it is understood, for

breakfast porridge made with half a pound of oatmeal and supped with half a pint of milk, or tea, or coffee, and bread and butter, with perhaps either an egg, a bit of bacon, or a herring. Dinner is frequently Scotch broth, cooked with cabbage, other vegetables, and beef; from 4 to 6 ounces of the latter is what falls to the share of the heads of a family. Supper, tea or coffee, with bread and butter, sometimes accompanied with a little delicacy. Mill and factory girls who do not reside at home but in lodgings or rooms are compelled to live more plainly, their wages being insufficient to pay rent, clothe themselves, and procure to the full extent the kind of fare specified. Animal food is therefore more rarely on their tables. Dressmakers, milliners, and shop girls make about as much money weekly as the workers in the factories, accordingly they have to be equally careful in the disbursement of their wages; nay even more economical, as they must necessarily dress better than those employed in jute works. Domestic servants' wages are from $60 to $75 per annum, with board. They have less personal liberty than the women workers named, but housemaids and such like, when in respectable families, are more generously fed and cared for than factory girls, sempstresses, or shopkeepers, especially when these do not live under the parental roof.

Trade has been on the whole prosperous in Dundee during the past year. Working people in all branches of industry have in consequence had, it may be said, plenty of labor. The iron-ship building business has been exceptionally busy, and the men engaged in it have made large wages. The building trade has continued languid all through the year, but steady and competent masons, house-carpenters, &c., could generally find constant employment. In closing, no comparison is drawn between the condition of the working classes in the United States and this country, but the facts given are left to tell their own tale.

WILLARD B. WELLS,
Consul.

UNITED STATES CONSULATE,
Dundee, November, 1883.

STATISTICS OF NEW BRUNSWICK.

REPORT BY CONSUL LANGE, OF ST. STEPHEN.

This Province is bounded on the northwest by Quebec and the Bay of Chaleur, on the northeast by the Gulf of St. Lawrence and Straits of Northumberland, on the south by Nova Scotia and the Bay of Fundy, and on the southwest by the State of Maine.

The surface is for the most part flat or undulating. With the exception of the district in the northwest bordering on Quebec and the river Restigouche, no portion of New Brunswick is marked by any considerable elevation. Here, however, the country is beautifully diversified by hills of 500 to 800 feet in height. The soil is deep and fertile. Of the whole acreage, 14,000,000 acres are set down as good land and 3,600,000 acres as poor land.

This Province contains a rich and extensive wheat-producing district; but the inhabitants, dividing their time between farming, lumbering, fishing, and other pursuits, and following no regular system of tillage, have not until quite recently attempted to keep pace with modern agricultural improvements. Signs of improvement begin to be manifest

only slowly, but the exhaustion of the resources of the forest will compel the farmer to acquaint himself with the principles of scientific agriculture in order to farm in a more judicious and profitable manner.

Area: 27,710 square miles or 17,600,000 acres.
Improved lands: 1,253,299 acres.
Lands occupied: 3,809,621 acres.
Under crops: 849,678 acres.
In pasture: 392,169 acres.
Land in garden and orchards: 11,452 acres.
Population by census, 1881: 321,233.

PRINCIPAL PRODUCTS.

Lumber, wheat, barley, oats, rye, peas, beans, buckwheat, corn, potatoes, and turnips.

Raised in one year.—Wheat, 521,956 bushels; barley, 84,183 bushels; oats, 3,297,534 bushels; rye, 18,268 bushels; peas and beans, 43,121 bushels; buckwheat, 1,787,223 bushels; corn, 18,159 bushels; potatoes, 6,961,016 bushels; turnips, 990,336 bushels; other roots, 159,043 bushels; grass and clover seed, 7,257 bushels; flaxseed, 1,745 bushels; apples, 231,096 bushels; hay, on 389,721 acres, 414,046 tons; butter, 6,527,176 pounds; cheese, 172,144 pounds; flax and hemp, 26,713 pounds; maple sugar, 453,124 pounds; hops, 15,006 pounds; grapes, 2,108 pounds; home-made cloth and flannel, 808,462 yards; home-made linen, 51,466 yards; furs of all kind, value, $13,895.

Animals.—Number of horses, 43,927; number of cattle, 212,560; killed or sold, 35,414; number of sheep, 221,163; killed or sold, 88,743; number of swine, 59,904; killed or sold, 53,087. From the sheep were produced 760,531 pounds of wool.

MANUFACTURES.

There are a great many small manufacturing establishments in this Province, but only few carry on the manufacture of goods on a large scale. The cotton industry promises to be the largest in New Brunswick, on account of the superior facilities for water-power, no less than three extensive establishments being at present in operation, with two others in process of construction, one of which, the Gibson mill, at Fredericton, will have a capacity of 60,000 spindles when completed.

The amount of capital invested in manufacturing of any kind was, in 1881, $8,425,282; number of hands employed, 19,922; amount of yearly wages paid, $3,866,011; value of articles produced, $18,512,688. A large amount of capital has been invested since these figures, taken chiefly from the census report of 1881, were obtained; but no means of procuring accurate information with reference to it are at present available. Among the goods turned out by the smaller factories may be mentioned agricultural implements, boots and shoes, granite monuments and pillars, furniture, locks, axes and edge tools, confectioneries, &c.

MINING.

The principal mineral products, with the average amount of each product yearly, are as follows: Iron ore, 500 tons; manganese, 2,133 tons; coal, 24,589 tons; gypsum, 995 tons; building-stone, 221,655 cubic feet.

One-third of this Province is covered by rocks of the Carboniferou

period. In the Grand Lake district, in the counties of Queens and Sunbury, there are upwards of 100 square miles underlaid by beds of bituminous coal, which at present are mined at a very limited extent in the most primitive manner. A farmer who finds a seam of coal on his land employs persons to dig out a certain quantity. This is bought up by agents and shipped to Fredericton, St. John, and elsewhere. There is no system whatever in mining it. An American company has leased a tract of land on Grand Lake, and there is every probability that the supply will now be largely increased.

FISHERIES.

A coast line of 410 miles which is indented by deep and spacious bays and harbors, and the number of navigable rivers which traverse this Province, make the fisheries a very important branch of the industry. According to the annual report of the department of marine and fisheries for the year 1882, the total number of men employed in the fisheries is 9,952; vessels, 191, representing a tonnage of 3,790, valued at $98,630; boats, 4,491; value, $163,157; value of nets, 354,932 fathoms, at $509,953; weirs, 274; value, $97,680. The annexed Table A gives kind, weight, and value of the fish product.

SHIPPING.

The number of sailing and steamships employed in New Brunswick waters is 1,065, with a gross tonnage of 308,980, of which 67 are steamships, with a tonnage of 9,922.

Lights and fog signals.—This Province has 42 light and fog signals for the protection of navigation at its coasts and rivers, which are located as follows: Bay of Fundy district, 28; St. John River district, 14.

PRODUCTS OF THE FOREST.

Accurate information on the products of the forest can only be obtained on lumber cut from the crown lands, and only approximate estimates on the quantities of lumber cut from private lands can be given. (See annexed Table B.)

It is the general opinion of lumbermen and those acquainted with the forests of this Province that at the expiration of from ten to fifteen years all of the large and soft wood timber will be exhausted and the manufacturers of lumber will have to fall back on second growth and small woods for the supply of their mills.

RAILWAYS.

Nine hundred miles of railways have been constructed in New Brunswick, and are operated by the following lines: New Brunswick Railroad, operating 443 miles. The Grand Southern, connecting St. John and St. Stephen, and in process of construction along the coast of Maine to Bangor, operating at present 80 miles. The Intercolonial (Government) Railroad, operating 345 miles in the Province, and connecting St. John, Moncton, and the north shore of the Province with points in Nova Scotia and the upper Provinces.

Other lines are: The Albert 45 Railway, ½ miles; St. Martin's and Upham, 30 miles; Elgin Branch, 22 miles; Chatham Branch, 8 miles; Kent Northern, 28 miles; Dalhousie Branch, 6 miles.

EDUCATION.

According to the annual report of the schools of New Brunswi number of schools in the year 1882 was 1,409; teachers and assis 1,436; total number of different pupils in attendance at school the year, 63,793. The proportion of the population of the Provi tending the public schools during the year ended October 31, 188 1 in 5.03. Average salaries of teachers for the year ended 30th 1882: To male teachers, first class, $508; second class, $314.40; class, $235.80. To female teachers: First class, $338; second $230.27; third class, $185.71.

IMMIGRATION.

The number of arrivals of immigrants during the year 1882 for ment in this Province shows, through the St. John agency of im tion, 310, viz: English, 121; Irish, 45; Scotch, 11; Danes, 116; F and Belgians, 8. In addition to these by other inlets there wer making a total of 564 settlers.

The amount of money brought in by these was, in cash, $44,50 the value of their effects was $5,390.

The erection of cotton mills has given a great impetus to the gration of skilled mechanics from the United States, a class of grants who are bringing considerable means in addition to their hold effects.

CLIMATE.

The climate of New Brunswick is remarkably healthy. In th rior the heat in summer rises to 80°, and sometimes to 95°; and i ter, which lasts from the middle of December to the 1st April, th cury sometimes falls as low as 40° below zero. At Fredericto capital, situated on St. John River, 65 miles from the southern a miles from the northern coast, the temperature ranges from 35° to 95° above zero, and the mean is about 42°.

PAUL LANGE,
Co

UNITED STATES CONSULATE,
St. Stephen, December 17, 1883.

Yield and value of fisheries of New Brunswick during the year 1882.

Kinds of fish.		Quantities.	Price.	V
Salmon:				
Pickled	barrels	61	$18 00	
Fresh, on ice	pounds	1,014,448	20	2
Smoked	do	120	20	
Preserved, in cans	do	38,350	20	
Mackerel	barrels	2,563	10 00	
Mackerel	cans	129,642	15	
Herring	barrels	121,743	4 00	4
Herring, frozen	per 100	17,676,280	40	
Herring, smoked	boxes	1,073,970	25	2
Alewives	barrels	23,164	4 00	
Cod	cwt	43,487	4 25	1
Cod, tongues and sounds	barrels	192	7 00	
Pollock	cwt	10,989	3 50	
Hake	do	65,376	3 50	2
Hake sounds	pounds	63,500	1 00	
Haddock	cwt	15,757	3 50	

Yield and value of fisheries of New Brunswick during the year 1882—Continued.

Kinds of fish.	Quantities.	Price.	Value.
Halibut ..... pounds..	230, 831	$0 06	$13. 849 86
Sturgeon ..... do....	284, 350	06	17, 061 00
Shad ..... barrels..	3, 866	8 00	30, 928 00
Bass ..... pounds..	250, 706	06	15, 042 36
Trout ..... do....	83, 459	06	5, 007 54
Smelt ..... do....	2, 838, 624	06	170, 317 44
Pickerel ..... do....	120, 000	06	7, 200 00
Perch ..... do ..	35, 000	06	2, 100 00
Sardines ..... hhds..	27, 285	6 00	163, 710 00
Eels ..... barrels..	996	9 00	8, 964 00
Oysters ..... do....	5, 859	3 00	17, 577 00
Lobsters:			
Preserved ..... cans..	5, 916, 575	15	887, 486 25
Fresh ..... tons..	972	30 00	29, 160 00
Fish oil ..... gallons..	84, 923	65	55, 199 95
Fish guano ..... tons..	746	15 00	11, 190 00
Fish used for manure ..... barrels..	22, 365	50	11, 182 50
Total, 1882	.....	.....	3, 192, 338 85
Total, 1881	.....	.....	2, 930, 904 58
Increase	.....	.....	261, 434 27

The average yield of the fisheries in this province per head of those engaged in them is $310.

Products of the forest.

Different kinds.	Cut from Crown lands.	Cut from private lands.	Aggregate.	Value.
Spruce and pine logs..... superficial feet..	159, 934, 977	159, 000, 000	309, 934, 977	$2, 479, 479 00
Hemlock logs ..... do....	290, 980	40, 000, 000	40, 290, 980	241, 745 40
Cedar logs ..... do....	789, 023	2, 273, 397	3, 062, 420	24, 552 00
Birch ..... do....	.....	29, 000	29, 000	348 00
Birch timber ..... tons..	.....	8, 766	8, 766	80 00
Pieces of piling	35, 046	35, 000	70, 046	70, 046 00
Boom poles	30, 002	50, 000	80, 002	20, 000 50
Cedar poles and posts	8, 680	25, 000	33, 680	3, 680 00
Hoop-poles	70, 000	71, 000	141, 000	1, 400 80
Shingles	2, 834, 000	4, 300, 000	7, 134, 000	25, 002 00
Railway ties	60, 999	100, 000	160, 999	2, 858 00
Ships' knees	2, 601	24, 300	26, 901	13, 450 50
Hackmatack timbers..... .....pieces..	187	1, 000	1, 187	1, 187 00
Spars	5	1, 000	1, 005	15, 075 00
Cord-wood	2, 994	25, 000	27, 994	55, 988 00
Hemlock bark ..... cords..	1, 925	10, 000	11, 925	59, 625 00
Treenails	12, 000	9, 000	21, 000	210 00
Total	.....	.....	.....	3, 014, 706 40

THE WINES OF MEDOC.

REPORT BY CONSUL ROOSEVELT.

I have the honor to transmit herewith a classified list of the famous wines of the Médoc, department of Gironde, France, showing the average yearly production of each class.

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Bordeaux, February 2, 1884.

A classified list of the famous wines of the Médoc, department of the Gironde.

[In casks of 60 gallons.]

Name of wine.	Commune.	Average yearly production.
FIRST CLASS.		
Château Lafite	Pauillac	720
Château Latour	do	360
Château Margaux	Margaux	720
SECOND CLASS.		
Mouton	Pauillac	480
Rauzan-Ségla	Margaux	240
Rauzan-Gassies	do	180
Léoville-Lascases	St. Julien	500
Léoville-Poyféré	do	300
Léoville-Barton	do	300
Durfort-Vivens	Margaux	200
Lascombes	do	160
Gruaud-Laroze-Sarget	St. Julien	400
Gruaud Laroze	do	400
Brane-Cantenac	Cantenac	400
Pichon-Longueville	Pauillac	240
Pichon-Lalande	do	280
Ducru-Beaucaillou	St. Julien	400
Cos d'Estournel	St. Estèphe	600
Montrose	do	720
THIRD CLASS.		
Giscours	La Carde	500
Kirwan	Cantenac	600
D'Issan	do	400
Lagrange	St. Julien	1,000
Langoa	do	500
Malescot St. Exupéry	Margaux	600
Brown-Cantonac	Cantenac	500
Palmer	do	600
La Lagune	Ludon	300
Desmirail	Margaux	200
Calon-Ségur	St. Estèphe	600
Ferrierè	Margaux	60
Mis d'Aleame-Becker	do	48
FOURTH CLASS.		
St. Pierre	St. Julien	320
Branaire-Ducru	do	520
Talbot	do	400
Duhart-milon	Pauillac	400
Pouget	Cantenac	120
La Four-Carnet	St. Laurent	520
Rochet	St. Estèphe	180
Beychevelle	St. Julien	640
Le Prieuré	Cantenac	140
Mis de Therme	Margaux	320
FIFTH CLASS.		
Pontet-Canet	Pauillac	720
Batailley	do	440
Grand-Puy-Lacoste	do	500
Ducasse-Grand-Puy	do	400
Lynch-Bages	do	300
Lynch-Monsaas	do	400
Dauzac	La Carde	360
Monton d'Armailhacg	Pauillac	600
Le Tertre	Arsac	500
Haut-Bages	Pauillac	120
Pédesclaux	do	160
Belgrave	St. Laurent	320
Camensac	do	240
Cos-Labory	St. Estèphe	160
Clerc-Milon	Pauillac	120
Calvé-Croizet-Bages	do	200
Cantemerle	Macau	800

List of the superior table clarets of the Médoc.

[In casks of 60 gallons.]

Name of wine.	Commune.	Average yearly production.
.....	St. Estèphe	400
.....	....do	120
.....	....do	80
.....	....do	160
le Pez	....do	560
Marbuzet	....do	720
.....	....do	200
.....	....do	120
.....	....do	160
.....	....do	200
.....	....do	320
rramey	....do	800
.....	....do	400
Grazilhon	....do	360
.....	....do	320
e	....do	360
anderie	....do	320
ane	Pauillac	120
lu Colombier, Monpeloup, Laurent-Desse	....do	140
peleu	....do	100
Bages	....do	400
es	....do	800
alicot	....do	200
Haut-Bages	....do	320
Bellevue St. Lambert	....do	100
Bellevue Cordeillan-Bages	....do	120
.....	....do	120
nac	St. Julien	200
on-Larose	St. Laurent	100
Larose-Perganson	....do	600
Barateau	....do	300
Talan	....do	180
Caronne-Ste. Gemme	....do	220
Beaumont	Lussac	400
Lanessan	....do	400
Lamothe	....do	280
Lach-anaye-Ste. Gemme	....do	720
Fouréan	Listrac	480
Lestage	....do	480
Hosten	....do	400
Dupré	....do	280
ade	....do	120
Clarke	....do	400
ade	....do	440
Pomeys	Moulis	400
Poujeaux	....do	400
oleen	....do	400
Manvezin	....do	600
.....	....do	200
Gd. Poujeaux	....do	200
Duplessis	....do	560
Bel-Air	Soussans	200
La Tour de Mons	....do	400
Powell	....do	500
Haut-Breton, Larigaudiere	....do	.....
Villegeorge	Avensan	80
Citron	....do	1,200
La Bégoroe	Margaux	240
Abel Laurent	....do	240
Doumens	....do	280
Lagurgue	....do	160
Lamouroux	....do	160
.....	Cantenac	300
l'Angludet	....do	280
ludet-Cantenac	....do	180
-Lachapelle	Labarde	140
-Geneste	....do	100
Giran	....do	240
at	....do	160
on	Arsac	120
l'Arsac	....do	500
.....	....do	180
les Trois-moulins	Macau	120
La Houringue	....do	300
Cambon	....do	200
Maucamps	....do	180
Priban	....do	180

List of the superior table clarets of the Médoc—Continued.

[In casks of 60 gallons.]

Name of wine.	Commune.	Average yearly production.
Château Rose la Biche	Maceau	200
Château Gironville	do	100
Château Nexen-Lemoyn	Ludon	100
Château d'Agassac	do	300
Château de Parempuyre	Parempuyre	400

WINE HARVEST OF FRANCE FOR 1883.

REPORT BY CONSUL ROOSEVELT.

The wine harvest of France for the year 1883 amounts to 792,642,000 gallons, which is an increase of 113,142,000 gallons over that of 1882, and, though considerably below the yields of former years, only shows a decrease of 198,000,000 gallons on the average of the last 10 years. This, then, is the most satisfactory harvest since the appearance of the phylloxera in the vineyards of France, the yearly production having varied between 550,000,000 and 750,000,000 gallons. During the period from 1860 to 1869 the total yield amounted to 1,100,000,000 gallons, and from 1870 to 1878, to 1,188,000,000 gallons.

The fine appearance of the vineyards in the summer of 1883 gave promise of an abundant harvest. In some departments of the east the frost and rain were hurtful to the flowering, though the mildness of the spring had everywhere favored the growth of the vine. Unfortunately the hail caused great damage in some vineyards. In others the drought which prevailed during the months of August and September parched the grapes, and altered, if not the quality, at least the quantity of the crop. The disastrous phylloxera, always prevalent in the departments of Aude, Bouches-du-Rhône, Cher, Pyrénées Orientales, Rhône, Deux-Sévres, and Hérault, last year extended its ravages to the vines in the departments of Indre-et-Loire and Loiret, while the mildew depreciated the harvest in the Gard, Basses-Pyrénées, Vaucluse, and the district of Aix. In many localities of the south the experiments tried for renewing the vineyards produced most serious results.

Notwithstanding many unfavorable circumstances, 56 departments show an increase over the harvest of 1882, and in 29 departments the production was greater than the average of the last 10 years. The good quality of the harvest is generally admitted.

As in preceding years, it has been necessary to resort to importation to supply the amount needed for consumption. Spain contributes largely to the deficit. From a total of 173,866,000 gallons of wine imported from the different countries of Europe for the first eleven months of 1883, 121,000,000 gallons were imported from Spain.

The deficiency in the production of the second wines has been, as usual, partly counterbalanced by the making of wine from the dregs, and from raisins; the result of these two fabrications is somewhat inferior to that of last year, the total being about 82,000,000, namely: Wine from dregs, 23,078,000 gallons; wine from raisins, 58,982,000 gallons.

The production of wine in Algeria, although a recent industry, is prosperous and invites attention. In 1876 there were in Algeria only 41,267 acres planted in vines, and giving a harvest of 4,862,000 gallons. In 1882 the number of acres planted increased to 96,373, and the production reached nearly 15,400,000 gallons.

In 1883 the yield in the department of Gironde was 41,086,300 gallons, showing an increase of 16,557,800 gallons above that of 1882.

The yearly production in the Gironde since 1874 will be seen by the following:

	Gallons.
1874	112,720,278
1875	116,147,020
1876	43,143,000
1877	77,244,568
1878	48,622,508
1879	34,485,132
1880	36,525,170
1881	28,072,000
1882	24,528,500
1883	41,086,300

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Bordeaux, France, January 22, 1884.

THE EFFECT OF REPRISALS ON THE WINE TRADE OF FRANCE.

REPORT OF CONSUL ROOSEVELT, OF BORDEAUX.

I have the honor to transmit herewith copy and translation of a petition addressed to the minister of commerce at Paris, signed by two hundred and sixteen leading wine merchants of the city of Bordeaux, relative to the prohibition of American salt pork into France.

GEORGE W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE.

[Translation.]

BORDEAUX, *January* 23, 1884.

The Hon. MINISTER OF COMMERCE,
Paris:

SIR: The prohibition of the entrance of all salt meat from the United States of America into France has caused the cabinet of Washington to propose a law which has been presented to Congress, and which will prohibit the importation into the United States of several French articles of commerce.

This system of reprisals already commenced by the increase of duty on our wines, as soon as the first decree forbidding the entrance of salt meat from America was pronounced, will now be completed by their total interdiction as well as that of all our spirits.

The passage of such a law would cruelly strike commerce in general and Bordeaux trade in particular; the effect would be disastrous.

To our great regret we can only submit to you the deficit that those unfortunate circumstances would cause our commerce in wines and spirits.

The chamber of commerce of our city has promised us its support, and will expose to you how many other interests would be ruined.

The total amount of goods exported to the United States from the port of Bordeaux, during the year 1883, was 27,216,421.35 francs; our wines and spirits alone amounting to 10,594,299.62 francs, or two-fifths of the value, and our wines alone to 9,965,738.96 francs, or more than one-third.

These figures are official, and, from their importance, you may judge what prejudice our city would sustain.

This sad situation which we most seriously dread (for our informers give the vote of Congress as certain) would be the result of retaliating the decree against American pork.

You are aware, sir, of all the measures taken to impugn that law—an *unjust* one in the opinion of the most enlightened authority in France, the Academy of Sciences; a *useless* one, since the American salt meat instead of coming directly to us arrives through England and Belgium.

We solicit your powerful support before the chamber of deputies, that the necessary measures should be promptly taken in order to repeal or cancel this decree, which, without justice and necessity, would greatly compromise numerous interests.

The United States consul at Bordeaux has kindly promised to submit to his Government a copy of this petition.

May our combined efforts bring the result which we most desire.

We have the honor to be, &c.

[Following, 216 signatures.]

EXPORT OF PERSIAN RUGS TO THE UNITED STATES.

REPORT BY CONSUL BENJAMIN, OF TEHERAN.

I have the honor to report that the number of Persian rugs and carpets exported directly to the United States during 1883 showed a decided increase in the volume of trade.

The aggregate exported by the house of Tjiegler & Co. alone reached some $40,000. The bales were shipped, it is true, by way of England, but they were directed to the United States, and the packages were unopened until their arrival in New York.

The number and amount of textile fabrics and other Persian products which reached the United States through other sources during the same period cannot be exactly ascertained, but appears to me to have equaled, if not exceeded, the amount shipped by Tjiegler & Co.

It is a fact worth knowing that, while the patterns now invented for Persian rugs have lately been inferior to those of former years, the rugs made for the house of Tjiegler are made after ancient designs, and also that the aniline dyes which at one time threatened to ruin the quality of Persian textile fabrics are now strictly forbidden to enter the dominions of the Shah.

S. G. W. BENJAMIN.

AMERICAN SALTED MEATS IN FRANCE.

REPORT BY CONSUL FRISBIE, OF RHEIMS, TRANSMITTING A TRANSLATION OF AN ARTICLE FROM LE JOURNAL DES CHAMBRES DE COMMERCE, OF PARIS, AN ARTICLE ON AMERICAN SALTED MEATS IN FRANCE.

I find in the January number (just received) of Le Journal des Chambres de Commerce, of Paris, one of the leading and most influential commercial journals of France, an interesting article on "American Salt Meat," which I have considered would be of interest and of some value to those interested in the subject in the United States, which I have translated, and herewith transmit as an evidence of the commercial and scientific mind of France on the subject. The italicised portions of the translation are the same as used by the editor for the purpose of emphasizing the more salient points of his article.

JOHN L. FRISBIE,
United States Consul.

UNITED STATES CONSULATE,
Rheims, France, January 26, 1884.

AMERICAN SALT MEAT.

[Translated by Consul Frisbie, of Rheims, from Le Journal des Chambres de Commerce, for January, 1884.]

We welcomed with satisfaction in our last number the decree of the 27th November, abrogating the one dated February 18, 1881, which prohibited the importation of salted pork meat of American origin. The French press approved this measure unanimously, which gave again to our working classes the means of procuring healthy and cheap nourishment, and rendered also to our transatlantic commerce its old activity; effectively it is by millions of tons that, since the 27th November, the figures of the transactions undertaken might be counted. The American press saw in this decree, so long waited for, a means to ameliorate in every way the political and commercial relations of the two nations; and the President of the United States, in his recent message to Congress, reported it to the American nation as one of the most happy results of the year.

Who could have thought that during the interpellation (which was, however, adjourned for a fortnight) an honorable deputy for Nantes, M. Gaudin, would address the Minister of Commerce on this subject, and would reopen all the question, and overthrow again such an important branch of the Franco-American commerce?

To explain the unexpected success of M. Gaudin, it must be stated that during the fortnight's respite that the adjournment had given him, the honorable deputy for Nantes got taken into consideration by the Parliamentary Initiative Commission, a proposition of law in five articles that would rule the importation of foreign salted meats. We may say, in parenthesis, that this project of law by the multiplied and onerous conditions to which it subjects this importation is in reality but a disguised prohibition of salted meats.

But M. Gaudin has done still better. He has played so well with the trichina that in his conferences with a large number of his colleagues he managed to convince them of the necessity to adjourn the importation of salted meats until the Chamber shall have definitely voted his project of law.

When the day of interpellation arrived M. Paul Bert gave to M. Gaudin all the assistance of his great influence, and deposed the following amendment:

"The Chamber, considering that it is best to put off the introduction of American pork until after the discussion of the proposition of law that has been submitted, passes to the order of the day."

Developing the interpellation, M. Paul Bert at first refused to speak to the point of the question, but held to one single question of fact: A proposition of law is submitted to the Chamber on the question of salted meats; it is best to await the vote of Par-

liament before modifying the state of affairs that ruled us by virtue of the decree of prohibition.

"If there is a decision to be taken it ought to be taken by Parliament, which ought to reconcile, if possible, the rules of hygiene and the economical conditions of the country."

Therefore, is the conclusion that the Government has to be invited to suspend the execution of the liberal decree of the 27th of November.

To this M. Hérisson replies in exposing the principal conditions which have determined the Government to do away with the interdiction. He especially recalls the numerous claims, as well from commercial chambers as from working men's syndicate chambers, in the countries where the working class eats, without the least danger, salted pork meat.

The minister states that anterior to the interdiction of 1881, never a single case of trichinose had been known in France.

In Switzerland, Belgium, and England, where the importation of American meats is free, never has there been a single case of trichinose having occasioned the death of a man.

Since the day that the decree was rendered there has been a new experience that absolutely confirms anterior experiences.

"Since the 27th of November," adds M. Hérisson, "these meats have been entered and circulated, and I have never heard it stated up to now that they have produced the slightest bad result."

To suspend the execution of the above said decree would be to place our country in a singular situation. Since the decree that annulled the interdiction has been passed numerous arrivals have been effected, and others are on their way. The consequence of the suspension would be to greatly trouble the commerce of American salted meats.

Mr. Hérisson finishes as follows:

"If the danger is as great as M. Bert declares, it is not only American salted meats the entry of which must be suspended, but also the other meats which we receive from every side. Everybody knows that American meats arrive in France from Antwerp, Liverpool, and from every side, and even direct.

"What is true is that trichina does exist; it exists almost everywhere. But trichina is one thing, and trichinose is another thing. I will return to this point if the discussion is to be prolonged, but I speak of known facts. Now, it has been proved by experiences of scientific men, by statements from the superior committee of hygiene, by the discussions of the academy of medicine, the authority of which, I think, is of the highest in such a matter, that the salting, if it does not kill the trichina, makes it inert to such a point that it is harmless.

"It has been equally proved that the cooking as done in France, Belgium, Switzerland, and England, was a sufficient guarantee.

"We think, therefore, that on these considerations it is not necessary to overthrow the decree of 27th November.

"We have, nevertheless, no repugnance to examine the proposition of M. Gaudin, on which it will be easy for us to come to a conclusion.

"For, if the Government thinks that there is no danger in permitting the entry of salted meats under the control of the municipalities, it also esteems that there is need of an examination to see if all cannot agree on the precautions and guarantees to be taken."

M. Peulevey, deputy for Havre, then said with much real good sense that the preoccupations which were gathering around this question seemed to him to belong a good deal more to agricultural protection than to public health.

"In the minds of a great many among us," he said, "this prohibition of salted meats was advantageous to agricultural interests. It is estimated that the price of swine, for agriculturists and breeders, ought to remain a great deal higher with the decree of 1881, but, nevertheless, it must be recognized that the prices have not risen as had been hoped; they are nearly constantly maintained in the old limits. They have even lowered; and do you know why? It is because of the circumstance which the minister of commerce, a short time ago, mentioned to you: It is because French pork in itself is insufficient, that there was a considerable entry of live hogs in our country which arrived by all the frontiers of Germany and Belgium, without counting the salted meat that arrived direct transformed in their packings.

"Therefore, the production in France was absolutely in the same condition, relative to the consumption, and we have only lost in this our commercial traffic, our freight, and the work of our laborers."

Purposely neglecting this side of the question, M. Paul Bert exerted himself in the endeavor to make out an interest of a superior order, that of public health, and he greatly impressed the Chamber in saying:

"I know the argument of millions of goods. I know the worth of the tons of salted meat that are on the docks of Havre and at other sea-ports; but I know also the value of the human lives that are threatened by the introduction of these meats."

These words produced the result he desired. They did instead of proofs that M. Paul Bert could not give of the facts and perils which he reported to the Chamber. He neither explained nor proved anything. Only the necessary result was produced, and, by 272 votes against 153, M. Bert's amendment was adopted.

We consider this vote as greatly to be regretted, and as being of a nature to considerably damage the commercial relationship between France and America.

For, it cannot be too often repeated, it is absolutely proved that the American meats, fully cured, kill the trichina or render it to such a point inert that it is without danger. More, the cooking absolutely kills the trichina; and as, to the contrary of what Germans do, no one in France eats raw meat. The danger, as for us, from trichinose is absolutely illusion; and, effectively, never has there been reported in France a single case of trichinose caused by the use of American cured meats. Also, in Switzerland, Belgium, and England, there has never been a single case, for the inhabitants of these countries have the same cooking habits as ourselves.

The prohibition is certainly nothing but a vexatious measure. During the period of prohibition—that is, from February 8, 1881, to November 27, 1883—the American meats have arrived the same as formerly in France, by the way of Antwerp or Liverpool, transformed in their packings during transit through Belgium or England. Notwithstanding these transformations (repackings), that damage the meats, these latter have poisoned no one; but, in revenge, this transit has lost to us our commercial traffic, our freight, and employment to our laborers.

But, as has been truly said at the tribune, the trichina exists almost everywhere with living swine.

The only epidemic of trichinose that has been known in France, that of Crépy-en-Valois, was from a hog of the country, of which the skin had been incompletely burned.

On the subject of epidemics from trichinose, from which Germany has suffered, M. Achard, deputy for Bordeaux, during the discussion of the interpellation, spoke as follows:

"M. Paul Bert spoke at length on the sanitary condition of Germany. He said that it was the introduction of American meats that had created this unsanitary condition. It will suffice to inform you that it is only in 1875 that American meats appeared seriously on the Continent, and that from 1860 to 1875 there were 35 trichinoscal epidemics in Germany. And you may remark that of these 35 epidemics, there were 29 of them of which the cause has been determined to a certainty. It was proved that 25 happened from eating of pork meat that had been killed at the pork-butchers; that 4 happened from eating of pork of swine killed at private houses.

"Therefore, of these 35 invasions of trichinose, it is certain that 29 have been determined by hogs raised and killed in that country. Was I right in saying to you, day before yesterday, that there was a veritable phantasmagoria passing before your eyes?

"The epidemic of trichinose in Malaga was caused by hogs raised and slaughtered in that country; and the French consul declared that the cases of trichinose up to that date were caused, without exception, by pork meat sent under the form of sausages from the village of Gilena, province of Andalusia, and that this malady had not been, up to the present, observed in the same meats imported from the United States.

Lastly, the question of hygiene has been disposed of in a sovereign manner by decisions of competent scientific bodies, by decision of the hygiene consultative commission, and by decisions of the academy of medicine, the most authorative body, and the one of which the competency is the highest and the most universally recognized, as follows:

"The Academy of Medicine, by a majority of 69 votes out of 72 voters, has decided that, thanks to our cooking habits, the eating of pork was entirely harmless. It decided that there were no precautionary measures necessary to be taken, no special rule to edict, and that there was no reason to interfere with the importation of salted meats into France."

This last decision of the Academy of Medicine is too important for us to hesitate in extracting the following passage from the discussion which preceded the vote above mentioned:

"In the month of October last M. Brouardel was sent into Germany, to Halberstadt, Saxony, to observe an epidemic of trichinose that had just manifested itself. Trichinaed pork, badly examined, had been sold to the public as hashed meat and sausages. The meat thus prepared had been mixed with that of a healthy animal. The inhabitants of the country ate this hash raw, spread on their bread. In a single village 250 persons were attacked with trichinose, and of this number 42 died.

"From the statements of M. Brouardel it appears that these maladies happened about three weeks after the sale of the meat; that is, after September 13, and that the individuals who ate of this meat the three first days were the worst attacked, but the meat bought and eaten the four following days caused less and less numerous victims.

"M. Colin explained this fact as due to the influence of the salt, which progressively

enfeebled and finally paralyzed the reproducing energy of the trichina. He adds that one cannot rely on putrefaction to destroy these parasites; they live and multiply in the most different situations.

"M. Brouardel again adds other statements. For example, the sex does not appear to have any influence on the development of the trichina, but children seem to resist trichinose better than adult persons. The cooking of trichinaed meat takes away all unhealthy character. A family ate sausages from the trichinaed meat of the animal without a single member of the family feeling any the worse, because they had taken the precaution to let it remain for five minutes in a pot of boiling water. However, the cook who ate some as well as the family was ill. She acknowledged later on that she had taken a piece of one of the sausages and ate it raw."

M. Brouardel next puts the question to know if doctors are not sometimes called to treat patients suffering from trichinose without recognizing the disease. He described the three different symptoms or conditions of the disease as follows: 1st. Gastro-intestinal disorders, diarrhea, &c. 2d. Muscular pains, prostration, stupor. 3d. Cachexy, physiological misery.

"The examination of suspected meat is practiced in Berlin with a perfectly sure method. It is not the same in the rest of Germany, and notwithstanding the army of 18,000 persons charged to inspect swine meat, accidents like the one at Halberstadt may again happen, either because of the negligence or the want of experience on the part of the inspectors.

"The only sure manner to prevent trichinose consists in cooking the pork, but it is difficult to impose this on the Germans, who like to eat raw pork. In this is the danger for Germany. This danger does not exist for us, because of our cooking habits."

We may further remark before closing this article, because it is an essential point, that all trichinose epidemics have been due to the eating of fresh meats and never to that of salted meats.

There is no guarantee against fresh meats but by the cooking; while against the trichina of salted meat there is first the curing and then the cooking after. There is, therefore, in this last case, two guarantees instead of one. The trichina that on a chance may have resisted an insufficient curing is not able to resist even a little cooking. If, therefore, our representatives would be logical in their entire prohibition they should prohibit still more rigorously than salted meats *all* meats (pork) living or slaughtered, cooked or raw, smoked or potted, of all countries. They must forbid with quite as much vigor the sale and consumption of our French pork. They must massacre without mercy every pig in France for fear of catching the trichinose in eating a slice of fresh pork insufficiently cooked.

The same logic of our deputies will soon bring about the result that we may not drink any more wine or alcohol; to never go out in a carriage, in a boat, or in a railway car, for fear of accidents which, these latter at least, are not rare nor contestable as those of the trichina.

Is it to this that our representatives wish to arrive? We shall see when the project of law proposed by M. Gaudin is discussed. Our readers will find further on the text of this project of law, as well as the new decree, called the suspension decree, and the report of the minister of commerce, showing the motive of the decree of suspension and invoking a precedent.

We will follow attentively the discussion of the project of law, but we must say that the micrographic inspection that forms its base seems to us too costly and even absolutely impracticable, because of the army of employés and officers it would necessitate. (This inspection necessitates in Germany 18,000 employés and officers, and costs 40,000,000 francs per year.)

We hope and trust that our deputies will not be influenced by the vote of surprise that has been torn out of them, and which contradicts the decisions seriously taken on the advice of the Academy of Medicine.

Science has not yet been able to discover the origin of trichina, but hereunder is a fact that may become a useful indication.

The great breeding of hogs is done in America on the immense plains of the West. The forests are cleared, trees cut down, the rubbish is burned, and corn is grown on which the hogs destined for slaughter are fattened. This breeding amounts to the figure of 35,000,000 hogs. It is not, therefore, as in Europe, the closet emptyings (filth) that fattens hogs for pork, but corn.

That is perhaps the explanation, absolutely experimental, of this fact officially stated, *that the causes of trichinose reported in Europe are caused by European-bred hogs.*

The Government, whose mission it is to defend the general interests of the country, cannot let itself be influenced, under such conditions as these, by considerations or quibbles of speculators.

The counter result of this action is already showing itself. A bill, said to be a "retaliation measure," has just been introduced in the United States Congress. It authorizes the President to cause to be examined all products arriving from the countries that have prohibited certain American goods because of hygiene, and to forbid

the importation into the United States any of these products that might be considered as injurious.

We hope that the French cabinet may avoid the realization of this threat that would close almost completely the United States markets to our exportations, which are already so tried; and that it may give satisfaction to the real interests of our country, interests that are evident to every person who will study the question without prejudice.

ALLEGED SHIPMENT OF AMERICAN WHEAT TO BOHEMIA.

REPORT BY CONSUL-GENERAL WEAVER, OF VIENNA.

The New York Herald, on the 16th of December last, published a cablegram from Vienna, that a cargo of 5,000 tons of American wheat had arrived at Laube, on the Elbe, Bohemia, being the first American wheat that had ever entered Austria.

Being very desirous of learning the facts in regard to the alleged shipment, I at once addressed a note to Mr. Herrmann, our agent at Reichenberg, who, after a thorough investigation of the matter, writes me, under the date of the 24th instant, as follows:

After making the minutest inquiries respecting the importation of American wheat, I am sorry to say that I have not been successful in that information which I have desired. The inclosed original correspondence from various forwarding houses, who are most likely to know about the subject, will show you how far apart their opinions are. While one positively asserts that American wheat has been imported into Bohemia, another denies this statement, while yet others say that it has been shipped into Germany only, but not passed the frontier. The Commercial Agency of the Imperial Royal Northwest Bahn at Laube are, I believe, the most reliable informants, and the conclusion can be drawn from the whole that no American wheat has been imported into this country.

All the informations are based on grain and rye, but not wheat.

It would appear, therefore, that no American wheat, but only American rye, has been imported as yet into this empire, although large quantities of wheat have been sent up the Elbe to the very frontier of Austria.

It is probable that the entry duty of 50 kreuzers per metrical centner (20 cents per 220 pounds), equivalent to 5½ cents per bushel, required to be paid when crossing the Austrian frontier, has been sufficient to shut out, for the present at least, the importation of American wheat into this country, whereas the duty on rye is only half that on wheat, viz., 25 krewzers per metrical centner.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, January 26, 1884.

CATALONIAN JACKS.

REPORT BY CONSUL SCHEUCH.

During the past year I have been addressed by several stock raisers and agricultural societies in the different States in regard to Catalonian jacks, and their suitability for exportation to the United States. I thought it best to gather as much information on the subject as possible, and compile it in a short report which might answer for all parties interested.

The stallion donkeys, or "jacks," as they are commonly called, of this province, and more especially those from the district of Vich, have been long celebrated for their large size and excellent qualities as mule-getters. Most of the farmers in the district of Vich breed donkeys, and it is estimated that from forty to fifty are eligible for sale every year.

These jacks are mature at the age of two and one-half years, and retain their vigor until they are fourteen years old.

The average height of a Vich jack at three years of age is about 14½ hands of 4 inches, but some are to be found as high as 16 hands.

The price of donkeys has increased considerably during the last few years on account of the great demand there has been for them. Young ones, say from two to three years old, have fetched from $200 to $250 each the past season.

The food of donkeys in this district consists of barley, oats, maize, beans, locust beans, chaff, and green stuff.

The climate of Vich is fairly temperate, the winter temperature ranging from 40° to 50° Fahr., and summer temperature 70° to 80°.

These donkeys have been sent to India, Australia, Cape of Good Hope, Great Britain, and the United States, and have been found to adapt themselves easily to different climates.

The first lot exported as an experiment to the United States consisted of six jacks, shipped by order of William Hall, of Charlestown, in October, 1848. In the following year 28 donkeys were shipped to the States. In the year 1852 another lot of 26 jacks were sent, and in June last (1883) 12 donkeys were shipped to New York (via Marseilles) for a dealer in the State of Kentucky.

There are not many opportunities for shipping donkeys from here direct to the States. They have generally to go to Marseilles by steamer, and there they are transshipped by steamer to New York. Charges from Barcelona to Marseilles, $8, and from Marseilles to New York, about $25 per head, exclusive of boxes and keep during voyage. One attendant must accompany every six animals.

FRED'K H. SCHEUCH, *Consul.*

UNITED STATES CONSULATE,
Barcelona, Spain, February 6, 1884.

CENSUS OF DENMARK—THE TENDENCY OF THE POPULATION FROM THE RURAL DISTRICTS TO THE TOWNS AND CITIES.

REPORT BY CONSUL RYDER, OF COPENHAGEN.

I have herewith the honor to transmit a short synopsis of the returns recently made public by the statistical bureau of the census taken in the year 1880 of the population of the Danish Kingdom.

Upon a close examination of the different sections of this voluminous statistical work, with its innumerable mass of figures, giving an elaborate résumé of the population and its increase, as also of its relative redistribution in the towns and rural districts, together with the various subdivisions of sex, age, the marriage state, occupation, and sanitary condition of the people, it will be seen, on comparing them with previous returns, that the progress which has taken place in most

branches has not been one of sudden fits and starts, but must rather be reviewd in the light of a steady and regular progressive, economical, and social improvement in all directions.

From the various sections of these tables, the following results may be extracted: First, that a considerable increase has taken place in the population during the last decennium (1870–'80), namely, of 185,526 souls (1,980,257 as against the previous census with 1,794,733).

Although this increase does not fully come up to that of the former decennial, still but few other European states can show a higher rate of increase, namely, Great Britain, Belgium, Holland, Germany, and Greece, the remaining states being behind, some, indeed, very far below Denmark in this respect.

The increase of population, which in previous decenniums was larger in Jutland than in the islands, is now about equal for both these divisions of the kingdom; and as regards the islands, it is to be noticed that whereas the island of Fyer, previous to 1840, constantly showed the greatest increase, whilst the islands of Zealand, Gotland, and Falster were remaining stationary, ever since that date there has been a steady tendency towards the reversing of such order among the islands, and that Zealand now occupies the first place in its increase of population. This advance on the part of Zealand, as plainly shown by the tables, will be found to be intimately connected with the very large increase which has taken place in the latter years in its chief town, Copenhagen. The increase of population in the capital during this period has been at a rapidly augmenting rate, namely, from 0.46 per cent. yearly during the years 1801 to 1840, to 1.20 per cent. from 1840 to 1860, to 1.67 per cent. from 1860 to 1870, and lastly to 2.62 from 1870 to 1880.

A similar movement is likewise to be noticed in the provincial towns throughout the country, although not in the same proportion as is seen in the increase of the capital. Nevertheless, here, as in most of the European states, is to be observed the constant tendency of the population to migrate towards the towns at the cost of the rural districts.

Thus, on comparison with the census of previous periods, a constant decline will be found in the percentage of increase of population throughout the rural districts; for whereas at the commencement of the present century there was a regular increase of 0.97 per cent., a gradual falling off took place in the following decennium until it reached 0.92 in 1860–'70, and is now reduced to 0.61 per cent. in 1870–'80.

The result of this movement is plainly to be seen in the much smaller relative difference between the populations of the towns with those of the rural districts as in former times. Thus while the population of the rural districts in 1801 was 3¾ times as large as that of the towns collectively throughout the kingdom—and even in 1840 nearly 4 times as large—the relative positions in 1860 were only as 3½ to 1; and now in 1880 as 2¾ to 1. The change is most notable in Jutland where the rural population in 1801 was 9 times as large, whilst in 1880 it was only 5¼ times over those of the towns.

As regards the density of population it will be seen that not only the neighboring Scandinavian peninsula and Finland with their large tracts of sparsely populated lands have a much less dense population than Denmark in 1880; the same is the case with the fertile Pyrenean peninsula, as well as Greece, Hungary, and Scotland.

On the other hand Saxony and Belgium maintained a density of population four times as great as that of Denmark; England and Wales, three and a half times; the Netherlands, two and a half; and Alsace,

Lorraine, Baden, Würtemburg, and Italy, twice. The extremes in the different countries are to be found in Finland, with 282 inhabitants per square mile, and Belgium, with 9,975, Denmark occupying the ninth place in the list of sixteen countries, with 2,753 per square mile.

As regards the relative proportions existing between the two sexes of the population, these are given in the returns of the census of 1880 as 1,000 males to 1,036 females.

The female sex have thus in Denmark the same superiority in numbers as is to be observed in most of the European states; nevertheless, it cannot be said that Denmark is overlargely represented by the females.

Besides the United States of America, Greece, Italy, and Belgium, where the male population has the ascendency, it is only in France, the Netherlands, Hungary, and Prussia where the population of females is proportionately less than in Denmark.

Again, on comparing the results of the four last censuses, it is shown that in the average numbers of members composing a family there has been a steady decline; namely, from 5.03 members in 1840 to the respective numbers in the following three censuses of 1860, 1870, and 1880 of 4.85, 4.82, and 4.75, this decline being most visible in the suburban districts.

The numbers of both sexes entering the marriage state can compare favorably with those of other lands, these being given with 352 married men and 340 females per 1,000 of each sex.

As regards the sanitary condition, whilst the weekly returns of death-rate in the towns and the average longevity of the population compares very favorably with those of other countries, it cannot at the same time be conceded that here as in other lands the sad scourges of idiocy and lunacy are found with each succeeding census to be steadily on the increase, there being now given in the census of 1880, idiots, 2,627, and lunatics, 3,288, the deaf and dumb, 1,248, and the blind, 1,294; and finally, the several means of subsistence of the Danish population is devoted under the following heads, namely, the professional and literary classes with 131,978 inhabitants; the pensions with 18,682; capitalists with 25,693; agricultural classes (proprietors, tenants, as also farm laborers), together, with 930,612; industry and commerce with 586,925; seamen and fishermen with 57,437; daily laborers and mechanics with 174,863; workhouses and asylums with 31,399; the agricultural interests being thus shown to be of prominent importance for the kingdom.

HENRY B. RYDER,
Consul.

CONSULATE OF THE UNITED STATES OF AMERICA,
Copenhagen, November 5, 1883.

TRADE OF RIGA.

REPORT BY CONSULAR AGENT BOMBOLDT.

SHIPPING CHARGES AT RIGA.

I have the honor to submit herewith some observations regarding certain charges to which vessels coming with cargo are subject in accordance with the customs of this port:

Address—Commission.—If stated in the charter-party, "Ship free from address," such is not paid by the ship at this port; but in the neighboring port of Libau this clause does not exempt the ship from paying same, and consequently it would be necessary to have the following clause inserted in the charter-party, viz: "Ship free from address, even if the customs of the port should stipulate otherwise."

Lighterage.—For ships chartered to Riga, or as near as they can safely get, owners might be under the impression that all lighterage would have to be borne by the receivers of the cargo, but unless the charter stipulates "all lighterage at Riga and the roads to be at merchant's expense," the ship would, according to the customs of the port, be held liable for all costs of lighterage.

The draught of water on the bar at Boldera (the outer port of Riga) is between 17 and 18 feet, and on the bar near Riga town 14 to 15 feet.

Freight payment in cash at current rate of exchange means, according to the customs of the port, the rate of exchange for three months' bills, which is generally about 1 per cent. less than the rate for short bills; and if it is understood that the freight is to be paid in "cash," the charter ought to provide this, with the following clause: "At the rate of exchange for short bills."

NAVIGATION.

The winter of 1882–'83 was unusually long, and navigation was closed from the latter part of December until the 3d of May, when the first steamer succeeded in getting through the ice. From that time to the 1st of October there arrived at this port 921 steamers and 842 sailing vessels, the greater part being steamers.

The British, German, Scandinavian, and Dutch flags were mostly represented. The German steamer fleet in the Baltic has augmented very much during the last few years. I regret not to be in a position to report any visit in this port of any ship flying the American colors.

EXPORTS AND IMPORTS.

The export trade was very brisk for a couple of months subsequent to the reopening of the navigation, and consisted mostly of grain (oats, rye, barley, hemp, and linseed), wheat (in very small lots), flax, hemp, fir-deals, battens, sleepers, and timber. The exports during the summer have fallen off somewhat.

The harvest has been pretty good in this district, and a lively export business is anticipated this season in grain, hemp, and flax. For steamers the freights have ruled low, whereas for sailing vessels, owing to scarcity of tonnage, the rates for wood cargoes have gone up.

Petroleum.—The import from the United States is on the decrease, owing to the Russian oil gaining the field in consequence of its being about 25 per cent. cheaper, although the American product is considered superior in quality.

Agricultural implements, tools, &c., from the United States are appreciated in this market and find a ready sale.

The railways in the interior connected with this port have lately reduced their tariff on grain, and from this cause a larger export in the autumn may be looked for. The railways to Liban may also likely follow suit, and it is under contemplation there to have elevators, after the American system, erected, in order to facilitate the increasing business in every way.

Exhibition.—During this summer a local artisans and trades exhibition was held in this city and was very well supported with exhibits from this and neighboring districts.

PET. BOMBOLDT,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Riga, October 1, 1883.

SHIPPING AT ST. PETERSBURG AND CRONSTADT.

TRANSLATED FROM THE GERMAN OF P. SEROK, SHIP-BROKER AT ST. PETERSBURG, BY CONSUL-GENERAL STANTON.

Navigation for 1883 opened on the 3d (15th) of May, and on the 25th November (7th December) the last steamers left our port.

There arrived from abroad, in all, 1,955 steamers and sailing vessels, which are divided, according to number and capacity, among the following nations:

Whence.	Total.		Divided as follows:			
	Ships.	Tons.	Steamers.	Tons.	Sailing vessels.	Tons.
English	744	599,919	689	587,291	55	12,628
German	425	174,251	282	153,286	142	20,965
Danish	262	111,102	106	90,337	156	20,765
Norwegian	208	69,891	40	13,994	168	55,897
Swedish	130	39,052	100	32,168	30	6,884
Russian	104	28,729	14	6,385	90	22,344
Dutch	64	25,791	25	17,542	39	8,249
Austrian	6	3,488	.....	.....	6	3,488
French	8	1,378	.....	.....	8	1,378
Italian	4	1,042	.....	.....	4	1,042
Total	1,955	1,054,643	1,257	901,003	698	153,640

Of these, 115 steamers (90,867 tons) and 69 sailing vessels (27,274 tons) cleared in ballast for other Baltic ports.

Of the vessels which arrived, 10, with 3,587 tons, remained here, being destined for inland navigation. Seven Russian ships with 1,487 tons wintered here in Cronstadt.

Compared with preceding years the figures are as follows:

Year.	Total.		Divided as follows:			
			Steamers.		Sailing vessels.	
	Ships.	Tons.	Number.	Tons.	Number.	Tons.
1880	2,889	1,119,601	1,188	784,674	1,701	334,927
1881	1,904	841,107	1,009	646,785	895	194,322
1882	2,193	1,006,595	1,069	754,644	1,124	251,951
1883	1,955	1,054,643	1,257	901,003	698	153,640

Although the number of ships arriving this year was less than in preceding ones, the tonnage at the disposal of our export trade was considerably larger. Fewer vessels left in ballast, and the number of small vessels was greatly reduced.

Of the two principal articles, grain and wood, the export was 7,847,003 tchetverts and 90,094 standards. Of the total export 87 per cent. was carried by steam and 13 per cent. by sailing vessels. In the preceding year the proportion was 76 per cent. to 24 per cent.

The reason why so few sailing vessels were employed was not an absence of demand, but on the contrary because of a lack of such vessels, for on the whole, as will be manifest later, they commanded higher freights than steamers.

The activity in the grain trade toward the close of the preceding year, in sales for delivery in spring and the early summer months, induced many of our leading firms in January to secure vessels for the east coast of Great Britain at 2*s.* and for the Continent at 2*s.* 3*d.* per quarter of wheat, several steamers being chartered for three consecutive trips.

The succeeding dullness and the consequent retrogressive movement in all grain markets caused later offers of vessels at these prices to be declined.

From the extensive activity in all ship-yards it would appear that there are plenty of steamers to meet the usual demands of the trade. Throughout the season freights moved within narrow limits, and even the usual rise for the last autumn trips was feeble, and only deals were forced to make a decided advance.

Steamships from Cronstadt commanded at the opening of navigation, for London, 1*s.* 9*d.* to 1*s.* 10½*d.*; to the east coast of Great Britain, 1*s.* 10½*d.*; to the Continent, between Hamburg and Havre, 2*s.* 1½*d.*; to Rouen, 2*s.* 4½*d.* per quarter of wheat of 496 pounds. Other cereals in proportion according to London and Baltic printed rates.

Towards the end of May these rates could no longer be maintained, ships being offered for London and the east coast at 1*s.* 6*d.*, for the Continent at 1*s.* 9*d.*, and towards the middle of June contracts for London were made at even 1*s.* 4½*d.* In the beginning of July, 1*s.* 9*d.* was paid for the east coast, 2*s.* for the Continent, 2*s.* 3*d.* for Rouen, and these rates prevailed until the end of August, when 2*s.* was paid for the east coast, 2*s.* 3*d.* for the Continent, and 2*s.* 6*d.* for Rouen.

A further improvement took place in September, when 2*s.* 4½*d.* for the east coast and 2*s.* 7½*d.* for the Continent were paid. This was the maximum, and from this time on the rates declined to 2*s.* 1½*d.* and 2*s.* 4½*d.*, closing in October at east coast, 2*s.* 3*d.*; Continent, 2*s.* 6*d.*; Rouen 2*s.* 9*d.*

Contracts for grain for Bremen and Bremerhaven were closed at 17 and 16 marks per last.

Flax freights opened in May and June at 20*s.* for Hull, 22*s.* 6*d.* for Leith, and 25*s.* per ton for Dundee; soon fell off 2*s.* 6*d.*, reassuming in autumn the former prices. To Antwerp and Dunkirk freights were, until the beginning of September, pretty steady at 30 francs per last, whence they rose gradually, closing at 40 francs.

Wood freights began in spring at 30*s.* to 29*s.* for London and 27*s.* 6*d.* for Hull, rising in July to 32*s.* 6*d.* and 30*s.*, in August to 35*s.* and 32*s.* 6*d.*, whilst towards the close of the season 45*s.* and 42*s.* 6*d.* for London and Hull were promptly paid per St. Petersburg standard of 165 cubic feet.

Trade with the Baltic was dull throughout the season, and was effectuated with Stettin and Lübeck by the regular boats exclusively.

Grain freights varied between 12 and 19 marks for Stettin, and 10 and 15 marks per last for Lübeck.

For Stockholm and Southern Sweden freights opened with from 13 to 14 marks, to Soundparta with from 14 to 15 marks per last of grain, rising in August from 3 to 4 marks, at which level, with few variations, they remained to the end. To East Jutland, from 20 to 26; to East Norway, from 20 to 27 marks per last of grain were paid.

STEAMERS FROM CITY.

Merchandise freights were: Stettin, 28; Copenhagen (anchorage), 30; Hamburg, 25 marks, with 10 per cent.; Amsterdam and Rotterdam, 25 florins; Antwerp and Dunkirk, 50 francs and 15 per cent; Malmö, 25 crowns; Gothenburg, 30 crowns; Christiania, 35 crowns. All in full per last, but in many instances considerable reductions had to be made.

Grain shipments from the Nevsky paid 5 marks, flax for Dunkirk 5 francs, and for Scotland 5*s.* advance on the above quotations from Cronstadt. For Hamburg via the Putiloff Port (new) grain freights varied from 19 to 22 marks per last.

Sailing vessels from Cronstadt, before the new deal arrivals from the interior, were difficult to place, even at 30*s.* for London and 27*s.* 6*d.* for coal ports; Holland, 21 to 22 florins, and 60 francs to Bordeaux.

During July, however, 30*s.* and 32*s.* 6*d.* had to be paid to coal ports, and 23 to 24 florins to Holland; 60 francs to Northern France; 71 francs to Bordeaux; and, ultimately, 40*s.* and 42*s.* 6*d.* were paid to coal ports, and 46*s.* to London, per St. Petersburg standard.

SAILING VESSELS FROM THE CITY.

Freights opened at 2*s.* 9*d.* to the eastern coast of Great Britain, 3*s.* to Channel ports, 3*s.* 3*d.* to the Continent, per quarter of wheat; 27*s.* 6*d.* per ton of flax, 12*s.* 6*d.* per ton of oil-cake, to Scotland; 22 marks per last of oil-cake to East Jutland; 22 marks per last of bonedust to Hamburg; 12½ florins per 80 cubic feet of deals to Holland. The lack of small suitable vessels was soon perceptible, and at the beginning of June the east-coast ratio was 3*s.*, and at the commencement of August 3*s.* 6*d.*, with a proportionate increase for Channel and continental ports. At the same time the rates for Scotland were 14*s.*; coaling ports, 13*s.* 6*d.*; east coast of England, 14*s.* 6*d.*, per ton of oil-cake, and to the Norbotton 1½ crowns per cool of meal. The rise continued, reaching its height in September, with 26*s.* 6*d.* to east coast of England, 21*s.* to the east coast of Scotland, and 20*s.* to coaling ports, per ton of oil-cake; 25 florins to Holland per 100 poods of naphtha; 30 marks to Western Sweden, 31 marks to the Danish islands, per last of oil-cake; 23 marks to sound ports, 24 marks to West Sweden, 25 marks to East Jutland, per 2,000 kilograms of rye, and 16 florins to Holland per last of deals. Shortly before close of navigation a slight decline took place, the last vessels being forced to accept, for coaling ports, oil-cake at 18*s.* 6*d.*; bonedust, 17*s.*; crushed bones, 19*s.*

The sea-canal was used during this season by 34 steamers and 115 sailing-vessels, with a draught of from 16 to 17 feet, English. The imported merchandise delivered at the Putiloff Harbor, as well as the grain loaded, was carried back and forth in lighters, so that this port has actually no value but for merchandise destined for immediate shipment per rail to the interior. Lighter rates were not cheaper than those from Cronstadt.

Work on the canal and the Gutuyefsky basin progresses rapidly, so that it is probable that by next autumn vessels drawing from 18 to 20 feet can come up to the Neva.

The canal begins at Cronstadt and follows a straight line of about 20 versts (7 versts equal 4 English miles) to Putiloff Harbor, where it divides in two branches, the northern one of which leads to the Gutuyefsky basin, about 5 versts further. The southern branch is intended for barges and lighters only. One-third of the length of the canal is protected by dikes. It has a width at the water-level of 350 and at the bottom of 210 feet, and is projected for the unobstructed passage of vessels drawing 20 feet.

The Gutuyefsky basin has a superficial area of 50,000 square fathoms, and 725 fathoms of docks on the east and northern sides for loading and unloading.

As soon as the necessary customs buildings, now in course of erection, are completed, this harbor will probably be the port of discharge and loading for most vessels arriving with a miscellaneous cargo.

The tracks surrounding the basin connect with the railways leading to the interior. For those vessels arriving with coal and iron, which cannot berth directly at the coal depots and factories, Cronstadt must continue to be the port of discharge, as also the port for loading with deals and the principal part of the grain shipped. It is indeed proposed to create other harbors, in order to concentrate the whole shipping trade at Gutuyefsky, but there is no prospect that this will be effected in the immediate future.

The prospects of next year's freighting business are favorable, inasmuch as there is a sufficient stock of grain to meet even a lively foreign demand, but higher rates, in consideration of the ample ship-room for ordinary conditions now existing, can hardly be expected.

Contracts for the coming year have already been closed with steamers for several consecutive trips, beginning with the opening of navigation, from Cronstadt, at following rates: Eastern coast of England, 1*s.* 9*d.*, and 2*s.* for the Continent (between Hamburg and Havre), and at 1*s.* 10½*d.* to the east coast, 2*s.* 1½*d.* to the Continent, 2*s.* 4½*d.* to Channel ports, 2*s.* 7½*d.* to the west coast of England, 2*s.* 10½*d.* to Ireland per quarter of wheat. Other grain in proportion; and at these rates there are more ships than wares. Contracts for the delivery of large quantities of grain at Stetti have been closed by the regular packets at 14 marks per lash.

Sailing vessels also were placed at 3*s.* per quarter wheat, from city, for the east coast of Great Britain, and at 12*s.* 6*d.* per ton of oilcake to the east coast of Scotland, with the usual options.

ST. PETERSBURG, *December*, 1883.

SHIP-BUILDING ON THE TYNE.

REPORT BY CONSUL LOCKE, OF NEWCASTLE.

For years past the river Tyne has enjoyed the distinction of being one of the greatest ship-building districts in Great Britain. Her banks, from Newcastle to the coast, contain no less than nineteen great yards, in which are built vessels of every description, from a steam launch to a twin-screw steel steamer of 3,500 tons. These yards are furnished with all the most improved machinery, with the very latest inventions

in every branch of the trade, and the Tyne ship-builders point with pride to the stanch, seaworthy vessels they turn out, a pride that is not unwarranted, as is shown by the fact that during the current week one of the Tyne firms has received an order for the construction of a large twin-screw steamer for use in Her Majesty's service.

That the ship-builders have utilized their advantages, during the past year especially, is shown by a glance at the official returns of the amount of tonnage launched on the Tyne during the year ending December 31, 1883, which show that in that time there were turned out 159 vessels, whose gross tonnage aggregated 216,573. The Clyde, the greatest ship-building river in the world, whose banks are but a succession of yards, launched in the same time 326 vessels of 417,881 tons, there being 44 firms building on the Clyde, while on the Tyne there were but 19, one of which, the Palmer Iron Ship-building Company, launched a greater amount of tonnage than any one firm on the Clyde.

But the Tyne, while the largest, is not the only ship building port in this consular district. There is the river Wear, on which, notwithstanding there is in progress an engineer's strike which has lasted six months, and is likely to continue as long, 126 vessels of 212,313 tons were launched; the river Tees, which launched 44 vessels of 81,795 tons; West Hartlepool, 39 vessels of 67,065; Whitby, 8 of 13,662, and Blyth, 5 of 5,869 tons, making a grand total of 381 vessels of 597,277 tons launched on the Tyne and within this consular district, against 326 vessels of 417,881 tons on the greatest ship-building river in the world, placing this coast at the head of the list by 55 vessels and 179,396 tons.

Following is a comparative statement of vessels built in this consular district, and on the Clyde, during the year 1883:

District.	Number firms.	Number vessels.	Gross tons.
River Tyne	19	159	216,573
River Wear	16	126	212,313
River Tees	5	44	81,795
Hartlepool	3	39	67,065
Whitby	1	8	13,662
Blyth	1	5	5,869
Totals	45	381	597,277
Clyde	44	326	417,881
Northeast coast over Clyde	1	55	179,396
Clyde, increase of tonnage, 1883 over 1882			22,732
Northeast coast, increase of tonnage, 1883 over 1882			23,761

The business on the Tyne has been steadily growing, the output of 1880 having been 148,713 tons; 1881, 177,165; 1882, 208,406, and 1883, 216,573 tons. Perhaps a large part of the increase of the past year may be attributed to something else beside the legitimate demand to supply loss by wrecks and permanent withdrawals. The preceding year was one of unusual activity. There was a great demand on all sides for vessels, particularly for iron steamers for carrying purposes. Large orders were given in 1882 which could not be filled during that year on account of that increased activity. Consequently the vessels were completed and come under the returns of 1883. Whether or not the haste to build in 1882–'83 was justifiable is a question that is just now very seriously agitating the minds of the shareholders in the many steamship companies organized at that time.

It is only a few years since the proposition to make iron take the

place of wood in ship-building was severely ridiculed and the proposers scoffed at as dangerous dreamers. But experience has shown not only that iron ships are safer than wooden, but that they are speedier and better adapted in every way to the requirements of commerce. But even iron, at the very height of its popularity, is to be supplanted by a more formidable rival—steel. There is a growing disposition everywhere in favor of this change, and last year several of the firms on the Tyne showed their estimation of its desirability by building of steel, where two years ago they would have used iron in the construction of the same class of vessel. In all the list of vessels launched on this coast last year not one of wood is mentioned.

The figures given in the table above make a very gratifying showing in cold black and white. Not only has the increase in vessels and tonnage been very large here, but in every ship-building port in the kingdom. New firms, anxious to reap the golden harvest of the two preceding years, established yards at every available spot, no less than five having begun operations on the Tyne during the last twelve months.

Was there any necessity for additional yards? Did the legitimate demands of commerce call for this great increase to the already enormous tonnage of Great Britain? From the quayside comes the reply of vessel-owners: "We cannot leave the mouth of the Tyne except at a loss"; and they prove the truth of their statements by taking their vessels out of commission. There are at the present time over an hundred steamers laid up along the banks of the Tyne, the owners refusing to load them with the certainty of dead loss staring them in the face. They hope by lessening the amount of carrying tonnage to force rates up to a living figure. If that does not succeed, they will lie idle until spring, which they hope will revive all branches of the trade and enable them to once more do a business at least remunerative enough to keep them from the actual loss—so much actual money out of pocket—they would suffer if they undertook a voyage now. But it is acknowledged on all sides that the outlook for vessel-owners for the coming season is gloomy enough. They say, bitterly, that the carrying trade is overdone; that even in the best of times rates could not be maintained at anywhere near their old point, because there is more tonnage offered than there is freight to be carried. Or, as a prominent shipping merchant aptly put it, "The number of vessels destroyed and the increase of business during the past two years have not justified the additions that have been made in that time to our merchant marine."

It is not only on the quayside alone that this feeling obtains. The shipyards that a year ago this time were teeming with busy workmen are now working half, and even quarter forces. Instead of all the stocks full of vessels in various stages of completion, the work being pushed to the utmost to fill the numerous orders on the books, there is many a stock without a vessel, and many an order book without an order. Whole yards are lying idle. Where there is work the hours of labor have been cut down, and wages reduced. Notices have been given of still further reductions, and on the last week in this month and the first in March the following scale of time wages will go into effect in nearly every yard from Blyth to the Tees: Carpenters, 5*s.* 6*d.* ($1.32) per day; joiners, 5*s.* 4*d.* ($1.28); spar-makers, 5*s.* 2*d.* ($1.25); riveters and caulkers, 5*s.* ($1.20); smiths and riggers, 4*s.* 9*d.* ($1.14); painters, 4*s.* 7*d.* ($1.10); fitters, 4*s.* 6*d.* ($1.08); sail-makers, 4*s.* 4*d.* ($1.04); holders-on and drillers, 4*s.* (96 cents); strikers, 3*s.* 4*d.* (80 cents). Piece-work will be reduced about 20 per cent.

The workmen are not dissatisfied with this reduction, but accept it, in

almost every instance, cheerfully, and are glad to be able to keep t places even at these figures. They see the number of men dropping each week as fast as the work in hand is finished, and they see but keels being laid. With the number of vessels in commission and o is impossible for them to expect continuous work at the old figures.

From present indications 1884 will see a marked falling off in amount of tonnage launched here and at other ports in this dist True, through some cause not now apparent, there may be a rev from this depression later in the season. But this is not looked forw to with any degree of hopefulness even by the most sanguine. measures taken by ship-builders everywhere, the wholesale discharg workmen, and the sweeping reduction of wages show that they h but little hope for the improvement of the present condition of aff in the near future at any rate. All the larger firms are industrio drumming for orders, but they come in very slowly, and are, for most part, for vessels of inferior size and quality. Competition is usually strong, and contracts are being made at unusually low figu But with all this the great depression continues, and to all appearar will continue for months to come.

Such is a brief statement of the ship-building in this district dur the past year, the condition of the trade at the present writing, and outlook for the immediate future.

ROBINSON LOCKE,
Consu

UNITED STATES CONSULATE,
Newcastle-on-Tyne, February 12, 1884.

NORTH OF ENGLAND IRON TRADE.

REPORT BY CONSUL LOCKE, OF NEWCASTLE-ON-TYNE.

I have the honor to transmit herewith an extract from the Newca Chronicle referring to the North of England iron trade, and giv the current market prices of iron per ton, as decided by the boar conciliation and arbitration.

ROBINSON LOCKE,
Consu

UNITED STATES CONSULATE,
Newcastle-on-Tyne, January 24, 1884.

THE NORTH OF ENGLAND IRON TRADE.

[From the Newcastle Daily Chronicle, January 24, 1884.]

The following document was issued at Darlington yesterday:

BOARD OF CONCILIATION AND ARBITRATION FOR THE MANUFACTURED IRON TR OF THE NORTH OF ENGLAND.

JANUARY 23, 18

GENTLEMEN: We append copy of Mr. Waterhouse's report for the two months ing December 31, 1883, containing the selling prices of iron.

Your obedient servants,

J. R. WINPENNY,
EDWARD TROW,
Secretari

44 GRESHAM, STREET, E. C., *January* 22, 1884.

To the chairman and members of the Board of Conciliation and Arbitration for the Manufactured Iron Trade of the North of England:

GENTLEMEN: Having collected from the firms and companies belonging to or associated for this purpose with your board the returns of their sales of manufactured iron during the two months ending December 31, 1883, and having verified the same by an examination of their books, I certify the average net selling price per ton to have been £5 17*s.* 11*d.*

Beneath are statements of the different classes of iron sold, and the average net selling price of each:

Sales during the two months ending December 31, 1883.

Description.	Weight invoiced.				Percentage of total.	Average net price per ton.
	Tons.	cwt.	qrs.	lbs.		
Rails	519	11	0	22	0.47	£5 9 3.23
Plates	74,393	11	0	0	68.11	5 19 10.93
Bars	14,227	11	1	5	12.03	6 0 5.36
Angles	20,079	14	1	11	19.39	5 9 1.24
Total	109,220	7	3	10	100.00	5 17 11.34

I am, gentlemen, your obedient servant,

EDWIN WATERHOUSE.

This return shows a decline of 2*s.* 8*d.* per ton upon the previous one sent out up to the end of October. The wages are not affected thereby, as Dr. Watson has an award under consideration, the sliding scale not being in existence. If the sliding scale had remained in force, the decline would not have been sufficient to cause a reduction of wages at the present time. There is a decline under each head in the production for the last two months of 1883 except for rails, owing, no doubt, to the late days at the end of the year affecting the output, as the works did but little for the last month of the year. The return made twelve months ago gave the net average selling prices at £6 8*s.* 6*d.* There was, therefore, a reduction of prices on the year of 10*s.* 7*d.*, a very considerable decline. The forthcoming award will, it is believed, be affected more or less by the present return. The production, it may be mentioned in the return issued to the end of October, was 117,365 tons, as against 109,220 tons in the present return.

PETROLEUM AND TONNAGE DUES IN MALTA.

REPORT BY CONSUL WORTHINGTON.

I have the honor to submit the following summary of information I have obtained concerning the business in American petroleum in Malta.

Petroleum oils are not subject to any duty, and are treated as "free goods." There are no Government charges for wharfage and lighterage, and the only obligatory document vessels have to prepare for and lodge at the custom-house is a manifest of imports, but no papers or information are claimed for any description of exports.

The small charge for custody of petroleum oil in Government warehouses amounts to ½*d.* (one cent) per case; a case contains two "tins" of 5 gallons each.

The amount of American petroleum imported, exported, and consumed in Malta for the year 1882 is as follows:

		Cases.
Remaining December 31, 1881		41,179
Imported from the United States	43,038	
Imported from Tunis	80	
Imported from Greece	3,969 =	47,087
Exported		12,900
Consumed in Malta (282,380 gallons)		28,238

The brands of petroleum received from the United States and mc used in Malta include "Gaslight," "Atlantic," "Peerless," "Prat Radiant," and "Pratt's Astral."

The present prices at which the importer (I take his last invoice gets petroleum from the United States, landed and put in his stor house in Malta, all expenses paid, are five shillings and fivepence hal penny per case, or 13 cents per gallon.

The wholesale merchants' selling price per case is five shillings an sevenpence per case, or 13½ cents per gallon.

The retail selling price at the shops to consumers is six shillings p case, or 14½ cents per gallon.

The slight difference between price per gallon at which the retail buys and sells, *i. e.*, one cent per gallon, seemed a strangely small prof but was accounted for in two ways.

First. The market price having dropped since the purchase of t last cargo received here.

Second. A systematic diluting of the article practiced by the sm: dealers.

Petroleum oil is in very general use throughout the islands for ill minating purposes. The poorer classes in the towns buy it by the lam ful, it being brought to their doors by peddlers who sell it in as sm: quantities as even a penny's worth. Other consumers buy it by the "ti

In the chief city of the islands, Valetta, a gas company lights t streets and public buildings and hotels with coal gas, charging at t rate of $1.50 per thousand feet.

The tonnage dues charged in the port of Malta are as follows: Eve ship or other sea-going craft discharging in these islands any quanti of goods shall pay tonnage dues at the rate of 3*d.* (or 6 cents) per to

Steamships shall, even when they shall not have discharged any goo pay port dues regulated as follows: If the tonnage of the ship does n exceed 400 tons, £1; if it exceeds that limit, but does not exceed 8 tons, £3.

The Government "office fees" are: Certificates under the official se: each 2*s.* 6*d.*; sheets of printed official forms, each, 2*d.*

Merchant steam-vessels exclusively chartered by the English Gove ment, and English war-ships, are not subject to the payment of p dues.

JOHN WORTHINGTON,
Consul.

UNITED STATES CONSULATE,
Malta, October 6, 1883.

JAPANESE FISH-OIL.

REPORT BY CONSUL VAN BUREN, OF KANAGAWA.

Our invoice record-books show such a rapid increase in the expor tion to the United States of "fish-oil," in its different forms, that I ha thought it might prove a matter of interest to our people to know son thing of its method of preparation and uses.

It is obtained from a small fish called "iwashi" (pronounced *ē-wa-sh* found in enormous shoals along the Japanese coasts, especially in t vicinity of Nambu, on the north of the main island. The largest catch are made in winter.

The ordinary process of trying is the one employed. The fish are placed, with a little water, in large iron kettles over a hot fire and thoroughly boiled. The contents are then poured into small filtering bags of paper, outside of which are similar ones of strong cloth. A number of these are placed in a press which forces out the oil through the pores of this double envelope. Usually two qualities of oil are obtained, the finer of the color of ordinary table sherry, the other a dark brown. The first is secured by a double trying and filtering. The residuum remaining in the bags after pressure resembles soft brown soap. This is known in commerce as "fish-stock," "fish-wax," "fish-oil cake," "fish-tallow," "fish-oil foots," and "soap-stock."

Before the importation of kerosene this fish oil was largely used in Japan for illuminating purposes. In its different forms it is now employed in the manufacture of soap and candles, and in softening the hemp used in rope-making.

The rapid increase in the value of its exports will be seen by the following table, taken from the customs reports:

	Yen.
1880	10,620.81
1881	3,098.02
1882	105,783.07
1883 (first ten months only)	133,858.33

The demand from the United States seems to have been recognized here for the first time in 1882, when the value shipped to New York, via Suez, declared at this consulate-general, was $1,615.98, Mexican, while, during the past year (1883), the declared export to the United States from this port has risen to $40,211.06, Mexican.

Still another valuable article is obtained in the preparation of the oil, namely, a rich manure, which consists of the bones and skin of the fish, the residuum left in the boilers after the fat is removed. It is known here as "kaw," and is said to be of more value, as a fertilizer, than guano.

I cannot ascertain that any of this is sent away from the country, which is not to be wondered at, as the prime necessity of the Japanese farmer is fertilizing material.

THOS. B. VAN BUREN,
Consul-General.

UNITED STATES CONSULATE,
Kanagawa, Japan, January 19, 1884.

BUTTERINE AND OLEOMARGARINE IN HOLLAND.

REPORT, BY CONSUL ECKSTEIN, OF AMSTERDAM, ON THE IMPORTS OF AND TRAFFIC IN OLEOMARGARINE, AND THE MANUFACTURE AND EXPORTS OF BUTTERINE, IN 1883.

It is pleasing to record that transactions in the articles of margarine and butterine in the markets of this country, in 1883, were exempt from the depressed and unfavorable condition attaching to the general commerce and industries of the country during the year in question.

The imports of margarine from the United States were considerably larger than in 1882, and also from European countries of production; and so has the manufacture of artificial butter been progressive and prosperous, as the exports of the products have increased during the year by several millions of kilograms.

The following is a statement showing the total imports of margari in the Netherlands in 1883, the quantity sold and delivered, and t stock on hand at the close of the year, viz:

Whence imported.	Tierces.	Kilogra
From United States	122,000	18,500,
From Austria and France (estimated)	.....	15,500,
Total	.....	34,000,
Sold and delivered in 1883	.....	32,000,
Stock on hand December 31, 1883	.....	2,000,

Formerly the market was subject to constant and great fluctuatic in the price, but during the past year it was characterized by mu more steadiness.

It is true that a great change in the price occurred rather sudden when early in the year. In January, prime American goods, previou held at and even over 100 florins per 100 kilograms, declined, and w soon thereafter sold at 85 florins, which remained the ruling figure some time.

A falling off in the demand for butterine in England, the princi market for the article, caused a further decline, so that in July only florins could be realized for same or highest grade American produc

Along in September the trade became quite animated, and, in con quence of a temporary decrease in the imports, the price rose again 90 florins, not, however, to be long maintained, but soon to come do again to 82 and 80 florins, at which latter figure it stood at the close the year.

The total value represented by the imports of margarine, Americ and foreign product, in 1883, is estimated at about 20,000,000 florins.

The stock remaining on hand at the end of year consisted almost e clusively of inferior goods, of which about 5,000 tierces, a great d whereof is said to be unfit for the manufacture of butterine, were h for account of American makers.

Amongst the most noteworthy facts appearing from the figures in t foregoing review of the year's transactions are: that the importance a value of the markets of this country can hardly be overestimated by e manufacturers and exporters of margarine, and the great extent to wh these markets are now being supplied by European producers of t article.

But it is not only that our manufacturers are now met here by, a will henceforth have to encounter, formidable European competition, account of the quantity of the goods, but more particularly in con quence hereof: that the quality of a very considerable proportion of t European product has recently been so very much improved. This fers more especially to Austrian margarine, various brands of wh rank now about as high and command about the same prices as pri American goods. In this connection, I deem it further deserving to stated that the butterine manufacturing interests of this country a quite extensive, and are being constantly more and more developed.

Large amounts of capital are invested therein, and no exertion wanting on the part of the manufacturers not only to retain but, if p sible, to increase the high reputation their product already enj wherever known or in the trade.

It may be superfluous to state how desirable an object it would se to be for all interested parties in the United States to maintain, or, i can be done, to increase their share in the trade in question.

I likewise hold it to be unnecessary to explain, in detail, the reasons why I believe this should be done, or point out how it may be accomplished.

I persuade myself that these are matters which are quite as well, if not much better, understood at home. But assuming this to be the case, it appears rather inexplicable how, nevertheless, it happened, in the course of the past year, and not unfrequently either, that good cause for complaint was given respecting some of the marks of margarine of well-known, long-established, high reputation, failed in reality to come "up to the mark," after the highest figures had been realized for them, and when the goods came to be "worked up" in the butterine factories.

I will not further enlarge upon this so important point, as it covers a fact which I would much prefer to have no occasion to allude to, but feel that I could hardly do justice to the subject in hand without mentioning it.

Furthermore, it is done upon the suggestion of parties here heavily engaged in the business, who handle the American product exclusively, and who claim that their interests in the matter are identical with those of the producers and exporters of the article in the United States.

In conclusion, and as a warning or admonition, I would offer the following few further remarks, and which, I trust, may be appreciated.

It is one of the strongly marked and peculiar characteristics of the people of this country who are engaged in important affairs, such as financial operations, manufacturing or merchandising, &c., to be uncommonly cautious, hesitating, and slow ere they ever bestow great or full confidence in those with whom they come in contact in business intercourse or with whom they are obliged or desire to have commercial relations.

However, their confidence once gained, is not easily shaken or lost again, but if ever forfeited and withdrawn, it becomes far more difficult to be re-established, than it was to gain it in the first place, which is always difficult enough.

D. ECKSTEIN,
Consul.

UNITED STATES CONSULATE,
Amsterdam, January 19, 1884.

CREFELD HIGH SCHOOL OF TEXTILE INDUSTRY.

REPORT BY CONSUL POTTER.

ORIGIN AND HISTORY OF THE SCHOOL.—VIEWS AND ACTION OF THE PRUSSIAN GOVERNMENT.—THE SCHOOL BUILDINGS, THEIR DIVISIONS AND USES; WHAT THE BUILDINGS CONTAIN AS CONVENIENCES FOR TEACHERS AND STUDENTS.—GOVERNMENT OF THE SCHOOL; ITS MUSEUM; WHAT IS SOUGHT TO BE ACCOMPLISHED BY THE ESTABLISHMENT OF THE INSTITUTION.—PLAN OF INSTRUCTION; TERMS OF ADMISSION, &C.

OPENING OF THE SCHOOL.

The spacious and beautiful buildings, which have been in process of erection for more than three years, for the better accommodation of this celebrated and growing school, was formally opened on the 15th day of December last, with imposing ceremonies, by the immediate representative of the Prussian Government, his excellency Baron Gossler, minister of the department of education and worship. There were pres-

ent a large number of distinguished personages and high state offici from different parts of Prussia, and the occasion was, in many wa interesting.

The minister was assisted in the performance of his duties for the d by his excellency Baron von Bardeleben, president of the province Rhenish Prussia, and by the following officials: Mr. Lueders, ch counselor for the department of education; Mr. von Schürtz, chief co selor for the Government, district of Düsseldorf; his honor the may Mr. Küper; the deputy mayor, Mr. Schüller, and the aldermen a councilmen of the city of Crefeld; Mr. Heimendahl, privy counse and president of the chamber of commerce, and the members of tl body; the head masters of the high school; the clergymen of all rel ious denominations, and the professors of the Royal Textile School.

A brief reference to the characteristics, origin, and growth of tl school may be of interest as well as useful to those who are encouragi at this time the establishment of a similar institution in the Unit States. Although this school has been in existence but a comparativ brief period, its usefulness, in promoting and improving the textile dustries in this locality, has been so marked as to be recognized throu out the German Empire. It is said to be now the largest, best pointed, and most progressive of any similar institution in Europe.

It is worthy of note that this school is regarded as a most importa element in giving character, life, and energy to manufactures and tra in textiles in this part of Prussia, and its foundation is in every w creditable to the active commercial community which has done so mu to bring it into existence.

Mr. Alexander Heimendahl, president of the Crefeld Chamber of Co merce, has been tireless in hard work and perseverance in its beha and to this gentleman is largely due the credit for the great succ attending the enterprise.

ORIGIN AND HISTORY OF THE SCHOOL.

In the year 1878 the Prussian minister of commerce, in compliar with requests embraced in a report and petition submitted by the C feld Chamber of Commerce, appointed a commission to visit Fran Belgium, England, Italy, and other countries which had attained es cial success in any branch of textile manufactures. This commissi consisted of officials and experts who represented the Prussian Gove ment and the Crefeld Chamber of Commerce, and were instructed investigate and thoroughly study the systems of technical educati prevailing in those countries, and to particularly note the latest i provements in methods of textile manufacture.

The report subsequently submitted by this commission to the Pr sian Government induced the minister of commerce to decide in fa of the establishment of a textile school to be located at Crefeld. Tl city, which had the distinction of expending more money, in proporti to its population, for educational purposes than any other town in Pr sia, offered the Government an eligible site for the buildings and 150,0 marks toward their construction. The earnest convictions of the c zens of this extensive manufacturing community were thus made ma fest as to the necessity of establishing, upon a comprehensive scale central school for weaving.

The cost of the buildings alone have been something more th 750,000 marks, of which sum the Prussian Government furnish 525,000 marks; and nothing appears to have been omitted to ma

their adaptation perfect for the purposes for which they were constructed. With a view of giving a more correct idea of their elevation and arrangement than can be done by a written description, I have appended to this report three photographic views in perspective, and a ground plan showing the divisions and uses to which the several floors of the buildings are devoted.

It is a noticeable fact that, while the people of Germany are, in a sense, poor, and their Government, with no surplus revenue, feels the necessity of enforcing the exercise of frugality in every branch of its administration, it nevertheless regards it as sound national economy to make liberal appropriations in aid of the establishment and maintenance of an institution for technical culture of this description.

On the occasion of the commemoration of the golden wedding of the Emperor of Germany the commercial community of Crefeld contributed means to establish a fund for granting stipends to talented poor scholars; and later, when it was decided to add to the weaving-school departments for dyeing, printing, and finishing, the liberality of the same contributors was again exhibited by raising the considerable funds demanded by the Government to meet their proportion of the increased expenses incurred by reason of the addition of the departments named.

The means for paying the ordinary running expenses of the school are derived, in part, from public sources—the state paying one half, while the city of Crefeld and the Chamber of Commerce provide, in equal proportions, for the remaining half.

When the school has a full attendance the fees from scholars, although the sum is but a trifle, comparatively, will pay a large part of the current expenses, the deficiency to be supplied by the Prussian Government, the city of Crefeld, and the Chamber of Commerce, not amounting, in the aggregate, to more than 50,000 marks ($12,000) annually.

On the 6th of October, 1879, the school was opened and instruction was commenced with 11 scholars. In six months the number had increased to 24. The full complement of students for the weaving-school is 150. At this date 135 students, from all parts of Germany and from foreign countries, are in attendance in the weaving department and are receiving instruction in the various branches which exhibit the latest improvements in textile manufactures.

The minister representing the kingdom of Prussia said the Government highly appreciated the efforts made in behalf of the school by public-spirited citizens, and he was especially gratified to note the substantial results already secured by the harmonious working of state officials with those of the city and commercial community of Crefeld, and he designated the occasion which was being commemorated as one of great honor, not only to that city, but to the whole of Germany.

In order to show how highly the Government valued the services rendered the state by the four gentlemen who had distinguished themselves by active and successful work in securing the establishment of this school, which promises so well in favor of German industries, the Emperor has conferred upon them decorations and orders of high honor.

DIVISIONS AND USES OF THE SCHOOL BUILDINGS.

The buildings were constructed in accordance with plans prepared by the city architect of Crefeld, Mr. Burkart. The main structure has two high-studded stories with a deep mansard roof and large dormer windows. There are two wings, between which are located the extensive weaving sheds. The main building is 193 feet long; the wings are 183 feet deep and 38½ feet wide.

On the ground floor is situated the dwelling apartments of the janitor the instruction room for the weaving school (two for decomposition and two for lectures), the library, reading room, physical laboratory, and the departments for dyeing and finishing; also a teaching room, private studios, chemical laboratory, and the dyeing and finishing works, with their machinery and appliances.

On the second floor are situated the larger rooms which are devoted to drawing, the series of rooms for the textile museum, the apartments of the principal professor, offices, and work-shops for joiners and mechanics.

The rooms immediately under the mansard roof (third story) are arranged for studios for drawing and designing.

The weaving sheds cover a space of 8,650 square feet, and have iron roofs supported by strong iron trusses to which is attached the shafting for driving machinery. The sheds contain at this time 60 hand and power looms, all of different construction, and representing the latest systems of manufacture. They also contain all known kinds of auxiliary machinery connected with weaving.

Every kind of weaving known can here be studied, and it is a marked characteristic of this institution, when compared with similar establishments, that it was not designed for the purpose of developing any particular branch of weaving, but embraces all branches and kinds of textile manufacturing in silk, wool, cotton, linen, jute, &c.

ACCOMMODATION FOR TEACHERS AND STUDENTS.

The following is a list of the number and kinds of looms and other machinery now in active use:

Hand-looms for weaving—	
Cotton goods	
Woolen goods	
Linen goods	
Half-silk goods	
All silk goods	
All silk velvet goods	
Auxiliary machines and all accessories for hand looms	
Power looms for weaving—	
Cotton goods	
Half woolen goods	
All woolen goods	
All linen goods	
Jute goods	
All silk goods	
All silk velvet goods	
All silk ribbons	
Preparing and auxiliary machines for power looms	

Each loom represents a different construction or system.

Two Cornwall boilers with 30 square meters of heating surface and improved fittings; one 12-horse-power compound engine and one 4-horse-power gas engine furnish the necessary power for driving the power looms, and for the dyeing and finishing departments, as well as for use in the laboratories and the heating apparatus of the building.

Leather belting and wire and cotton rope are used for driving the machinery.

The entire building, including weaving sheds, is lighted with electricity (Edison's method). For this purpose there is used one 12 horse power double gas engine (Otto & Langen system), and two dynamo electric machines (Schuckert's system), which are located in the cella of the building.

The school has at this time a library of 1,200 volumes which treat exclusively upon subjects taught in the school. It is also supplied with journals and other periodical publications which are devoted to matters connected with textile industries. These are accessible to teachers, scholars, and also, on certain days of the week, to the public.

The dyeing and finishing school has a large collection of chemical and physical apparatus. Connected with this school are bleaching, finishing, and dye works completely fitted up and furnished with the superior modern machinery and appliances, and such as are in actual use in the best equipped establishments.

The museum connected with this institution contains a most interesting collection of samples of textiles, embroidery, needle-work, laces, tapestry, &c., and exhibits the entire history of this kind of art, from the tenth century down to the present time. This collection was gathered after many years of labor, by that eminent artist, Mr. Kraut, of Berlin. After the collection was completed it was purchased by the Prussian Government for the Crefeld school, and is regarded as the richest and most extensive of the kind in existence.

The museum also contains a large collection of all kinds of raw material, showing the peculiar textile products and fibrous plants of different countries. The student in this school is thus enabled to study the textile art, *ab initio ad finem*, and to trace in the processes of manufacture all the various changes that take place from the time the seed is placed in the ground until the fiber of the plant springing from it is converted into the finished fabric.

The collection of samples of different kinds and qualities of cotton grown in America, contributed by the Government of the United States, are regarded as a very valuable addition to the museum.

GOVERNMENT OF THE SCHOOL.

The school is governed by a committee consisting of the mayor and deputy mayor of the city of Crefeld, who act as president and vice-president; one member of the Chamber of Commerce; two members of the city council, chosen with reference to their qualifications for this especial duty; the counselor of the administration for the district of Crefeld, and the principal professor of the school.

Professor Emil Lemke, who is at the head of the institution, is a practical man of great experience, and in all matters appertaining to textile industries is said to be the most accomplished and learned professor in Europe.

There is an able corps of assistant teachers, at the head of which is Professor Hohlbaum. There are three teachers for drawing and designing, one for drawing, three for decomposition, four for practical weaving, one foreman of mechanics, and one master joiner.

Mr. Schulze, one of the teachers of drawing and designing, and who was until a recent date connected with the Royal Museum of Art and Industry in Berlin, fills the position of custodian of the Royal Textile Museum belonging to this school.

The school for dyeing and finishing is under the direction of Dr. Lange, with one assistant teacher and one master dyer and finisher.

AIMS OF THE SCHOOL.

The object had in view by the founders of this school were—

First. To improve the quality of and methods for producing textile tuffs, and to develop the science and art connected with every branch

of their manufacture. It was believed that this end could be su fully attained by providing the means for educating, in a thoro practical as well as theoretical manner, young men to become for designers, engineers, and manufacturers in all of the various bra of business connected with weaving and textile industries.

Second. To afford young men who intend to become mercha clerks an opportunity of obtaining an accurate knowledge of me of manufacturing, so that they may have a trained judgment to re in passing upon the quality and value of textile goods.

Third. To give a thorough education in chemistry, by technica practical teaching, to those who may desire to pursue that sci especially in connection with textile manufacturing, as the busin life.

Fourth. To teach young men who desire to become merchants in and colors, or who wish to adopt as a trade the business of dyers, ers, or finishers, the methods and processes of manufacturing and mordants, and qualify them for testing and fixing the valu natural and artificial colors for dyeing and printing purposes; al qualify them, by actual working experience, to be master manufact dyers, bleachers, printers, and finishers; and, finally, to teach how to make use of such acquired knowledge in the business affa practical life.

Another important feature of this school is the introduction an struction in their use of small engines for "home work." Thi been done with the humane view of enabling house-weavers and l workers to more successfully compete with power-loom weaving i and velvet goods, which is now being rapidly extended to larg tories.

An experimental department has also been added to the scho the sole purpose of making experiments with small motors and p looms in order to determine which is the most practical and econo method of providing suitable power for what is termed "hou dustry."

The plan of instruction has two divisions.

DIVISION A.—*Instruction in drawing and designing.*

First course.—First year: Thorough instruction in drawing and ing subjects for weaving, printing, and other branches connected textile manufactures, from sketches, from models, and from na also, geometrical and machine drawing.

School for designs.—Second course, second year: Drawing lesson tinued, and composition of designs for textile stuffs, geometrica machine drawing. Lectures on textrine art and history. This c is for designers, form or pattern-cutters, engravers, and for indu and art drawing, and is especially designed to enable studen become professional designers and inventors of artistic patter weaving and printing.

After having passed the second course, scholars showing the n sary talent, are permitted to enter the department for drawing painting from nature, and to make designs for practical use. Sch particularly talented are allowed to enter this department during second years' course.

INSTRUCTION IN DIVISION B.

First course.—First year: Lectures on fibers for spinning, and o elements of weaving, principles of decomposition, and the arrange and fitting up of looms for producing plain and fancy goods and

terns with "small repeat," made by means of a shedding machine; practical weaving of plain goods, velvets and fancy goods, in cotton, wool, linen, and silk, on hand-looms; keeping of factory books; calculation; lectures, and machine elements.

Second course.—Second year: Knowledge of decomposition; preparing looms; composition and calculations for fancy goods on Jacquard looms; practical weaving of velvets and fancy goods from various materials, on hand-looms; practical work in weaving cotton, wool, half wool, linen, jute, and silk goods; also, silk velvet on power looms. Lectures on the construction, fitting up, and treatment of hand and power looms and other machinery and appliances for weaving; making constructive drawings for these lessons, &c.

Lectures on engines, spinning and finishing machinery, taking down and putting up looms and auxiliary weaving machinery, practical exercises on mechanical looms, on the forge, and in the machine and joiners' shops.

TERMS OF ADMISSION.

Only such scholars as are over fourteen years of age, and who have had the advantages of at least the culture of good common schools, are admitted. A higher age is recommended unless designing is to be pursued as the principal study.

If applicants present satisfactory testimonials as to culture and character they are admitted without examination, otherwise they must pass an examination which will show that they are in possession of such knowledge as will enable them to properly comprehend the character and object of the lessons they are to receive.

The usual time for admission is Easter. Admission can, however, be secured at other times, for exceptional reasons.

The school year is from Easter to Easter, and two years are required for a complete course in any one department.

Scholars who intend to make a special study of a particular branch may be admitted for a shorter period. The course of study for such students is fixed by the principal professor.

SCHOOL FEES.

For natives of Prussia, as follows:

	Marks.	
One-half year:		
First course	60	$15 00
Second course	90	22 50
In the studios	50	12 50

For natives of Germany, not Prussians:

	Marks.	
One-half year:		
First course	90	$22 50
Second course	120	29 00
In the studios	75	19 00

For students from other countries:

	Marks.	
One-half year:		
First course	150	$37 50
Second course	200	50 00
In the studios	100	25 00

School fees must be paid in advance.

Scholars in the weaving school, who desire, in the same course, participate in the lessons for dyeing and finishing, will be admitted (the following terms:

	Marks.	
Prussians, for a period of six months	100	$25
Germans, not Prussians, for a period of six months	150	37
Foreigners, for a period of six months	250	62

Terms for instruction in certain special branches must be arrang for with the principal professor.

Every scholar entering the school must agree to remain for a peri of at least six months.

Samples, patterns, and the necessary materials for weaving are pr vided free of charge. The expenses incurred for the material used weaving, and for practical exercises, are covered by the sale of the goo produced.

Colors and other materials used in the studios must be provided paid for by the scholars.

For admission to the school application must be made to the prin pal professor, Mr. Lemke, to whom, also, should be sent testimonials to qualifications, previous occupation, &c.

Every student who has taken a course of one full year receives diploma or testimonial when he leaves the school. Semi-annual notic of progress are also issued.

In particular cases honorary prizes and diplomas are granted.

T. W. POTTER,
Consul.

UNITED STATES CONSULATE,
Crefeld, January 17, 1883.

TECHNICAL SCHOOLS IN ENGLAND.

REPORT BY CONSUL SHAW, OF MANCHESTER.

The new technical schools which have already been established, a others which have been projected, in various towns in the United Kir dom promise to become very valuable factors in the great problem the leading manufactures of the future.

Liberal-minded and wealthy citizens have taken a deep interest these schools, and give their best attention to all details connect therewith. The main object in view in establishing them is to educa the young in all the practical manipulations necessary to work up ra materials into finished articles. It is hoped that theory and practice elementary principles being supplemented by competent instructors the workshop—may be combined, and the student gradually taug the best methods in dealing with any line of manufactures his ta may lead him to perfect himself in. The result must be, that careful trained and practical workmen and students will be turned out, ful competent to most intelligently take their places as skilled mechani in their chosen pursuits.

The influence which a large number of specially trained and skill operatives will exert in the mill and workshop of the near future mu be of very great service to English manufacturers. The good seed n being sown in this country in this connection will doubtless bear va able fruit in due time. The tendency of this kind of useful and prac

cal instruction is in the direction of educating the young to take an interest in manual labor, and to fully equip the student for an active occupation, where his great ambition will be to develop the methods and machinery employed in his favorite pursuit. In this way the true dignity of labor will be popularized, and this is a point worthy of the serious consideration of all who have the education and discipline of the young in their charge. The higher the intelligence of the operatives, the better will be the work they will be able to turn out. This view is becoming more and more deeply impressed upon the minds of all manufacturers in this country, hence, the lively interest which is now being taken in technical and other schools specially designed to aid the operatives of the future. In my special report on the cotton trade of Lancashire made last year I called attention to this important subject, and I now forward the prospectus of the Manchester Technical School and Manchester Institution as a carefully prepared and suggestive publication. This embodies the work of some of the ablest promoters of technical education in England, and will furnish much valuable information in this connection. High-class work of an artistic and costly character, which will call for skilled operatives in all its details, is to be the demand of the future. As wealth increases the taste and culture of the people will call for the best productions in all that enters into the surroundings of their daily lives. To meet this demand every promising means should be employed, in order that our industries may be able to keep pace with and, if possible, outstrip all competitors. This cannot be done without careful instruction, patient discipline, and the advantages afforded by the best possible opportunities for the student to early perfect himself in all the intricate details of manufactures. I herewith send a copy of the little pamphlet containing the record of the opening exercises of the technical school, and I feel confident it contains matter well worthy of being printed along with this report. At this time, when so much is being done in foreign countries in the way of technical instruction, such able criticisms cannot fail to be of general interest.

ALBERT D. SHAW,
Consul.

UNITED STATES CONSTLATE,
Manchester, December 6, 1883.

MANCHESTER TECHNICAL SCHOOL.

[Reprinted from the Manchester Examiner of September 28, 1883.]

The formal opening of the Manchester Technical School yesterday was an incident of no little interest to the district, and, it is to be hoped, of considerable importance to the future of the trade. The presence of Mr. Samuelson, M. P., an old and earnest advocate of technical education, together with so many of his colleagues on the Government commission, would alone have made the occasion interesting, and we were beforehand prepared to accept the testimony of Mr. Samuelson, Dr. Roscoe, and Mr. John Slagg as to the importance of the new college they last night assisted in opening. It is, as Mr. Samuelson said, a very much-needed institution; if it begins its life late in the century it is not too late; and, as more than one of Mr. Samuelson's colleagues pointed out, it has a vast amount of infinitely useful work awaiting it. The work, no doubt, had been attacked on this side and on that by the institution upon which the Technical College was founded. The old friends of the Mechanics' Institute will not willingly let the remembrance fade of the excellent results it can claim to its credit, and are to be excused if they resent the idea that Leeds and Bradford and Nottingham were beforehand with Manchester in establishing practical training schools for the arts and handicrafts of daily life. The institute is, in all truth, enti-

tled to the respectful regrets which will in many cases undoubtedly mingle with the new hopes arising out of the change which has been made in the old constitution. It served the working class population of the town well in its day. When free libraries were extended into almost every populous township, and the classes under the science and art department became an adjunct to every considerable school, and board schools, moreover, began to include in their curriculum the subjects on which the older institution established itself as a teaching agency, the Mechanics' Institutes, not in Manchester only, but in all the large towns, found their reason for existence disappearing. That is how the case presented itself to the directors of the Manchester Institute this time last year, when they came to the conclusion to convert it into a technical college for the practical education of the workmen of the future in the staple trades of the district around.

We could not, we confess, have expressed surprise if in the speeches of the members of the technical education commission at last night's meeting there had been a savor of reproach as well as regret that Manchester had not earlier instituted a technical school; but there appeared to be on all sides a disposition to rejoice over an accomplished fact rather than to impute neglect to those who have gone before us, or to deny the credit which is due to the gentlemen who tried to make the Mechanics' Institute the best substitute for such a school that could, under the circumstances, be supplied. Technical schools, indeed, grow, and do not spring into existence fully equipped. It was so in those very continental towns which were held up to us as models of imitation, and as, it must be said, worthy models of imitation. When we look to the circumstances of the origin of such of them as can be identified, the fact reveals itself that the most successful are the training schools which have developed from humble beginnings in proportion as the want increased which was first created by their infant efforts. If, indeed, the comparison were pressed invidiously, we might claim that the English artisans' proficiency and native artistic instinct were among the main causes of the establishment of the schools of design that have done so much for some of the old French and Belgian cities. It would be an idle effort, however, to invite the reply that the schools in foreign towns have enabled the foreign artisan to seize upon and retain the secret of a cunning and deftness and adaptability which, by the general evidence of the technical education commissioners, our artificers have allowed to pass from them. Yet the man would stamp himself as hopelessly pessimist, as well as strangely ignorant of the English workman, who ventured to argue that this faculty, however it may be described, which distinguished the continental from the British artisan was irretrievably lost. The faculty exists, if the knowledge is dormant. It is proved by the results of the schools of design encouraged by the South Kensington department that the faculty returns when the knowledge is supplied. It was precisely on these lines, as we read it, that Mr. Samuelson's instructive address was based. The country depends for its greatness and its prosperity upon its manufacturing industries, and we must maintain those industries against the increasingly keen competition of continental nations. We must try to meet that competition within the limits which wages and prices impose upon us, by putting more artistic skill into our work, not merely in its superficial appearance, but in the details of its production. That passes somewhat beyond the bounds of Mr. Samuelson's remarks, possibly; but nevertheless it does not misrepresent his argument, or the arguments of his fellow commissioners, in favor of the multiplication in the manufacturing centers of schools of technical education akin to that which has now been fairly founded in Manchester. By their aid we have everything to gain. The commission, Mr. Samuelson said, were of opinion that England continues to hold the position she always held in the forefront of the nations of the world; but still there is the obligation incumbent upon the country of seeing that its laurels remain fresh, and that its supremacy is not impaired by carelessness, neglect, or want of progressive knowledge in the workshops at home. In fine, we cannot afford to let the foreigner continue to enjoy his exceptional advantages of a valuable technical education; and in that matter must provision ourselves as he is provisioned.

But while we offer our cordial congratulations to the Manchester Technical School upon its formal opening, we shall only be doing it kindly service to remind its friends and supporters that all the fruits we and they hope to gather from the grafting operation which has just been made can only come as the result of time. Impatience is pardonable among those who are eager to see signs of the harvest of the seed they have helped to sow; but patience will need to be long and enduring before the bright prospect Mr. Samuelson and Mr. Magnus opened up to us here, or Mr. Slagg dwelt upon the other day at Rochdale, is realized as the outcome of the new school in Manchester. The Mechanics' College should be able to send into the workshops of the country men in every way better fitted than their predecessors to practice the industries they intend to follow, but years must pass before the diffusion of knowledge becomes appreciably recognizable in the superior native work which shall meet the eye in every corner. The experience of those more than all others concerned with the progress of elementary education, in itself a very much simpler thing, may be cited as a

caution against hasty expectations and premature judgments. Notwithstanding the great advance which has been made in the education of the country, Mr. Mundella, who is always hopeful, acknowledges that two generations must disappear before England, even from the elementary point of view, can be called an educated nation. Though every addition to the number of the practical schools which have sprung up of late years in the busy North is a distinct step in advance, needless disappointment will be avoided if due regard is given to the irresistible conclusion that not one or two generations only must pass away before the students of the technical colleges have formed a population of artistic workmen, such as is described as existing in those continental cities, where the advantages of a thorough training in the theory and practice of the arts and sciences have been freely enjoyed for centuries. Meanwhile the directors of the Manchester College may be profitably reminded that the useful field they have taken up will need to be sedulously cultivated, and with unremitting care, if it is to remain their own. While we would discourage their critics who are apt to be too hasty, we would not have them forget that they have rivals, and legitimate rivals, in other educational agencies which are rising and developing around them. The object of the Manchester Technical School is to supply the best means of turning out the best workmen in every department of industry which concerns the locality. With liberal support from the public, the experienced gentlemen to whom its future will be committed ought to be able to accomplish their very desirable purpose. But there are competitors rising up at home, we may even say next door. The popular colleges are entering into competition with them from above. They are every year increasing their means of supplying technical education in the industrial arts to the students whose bent is for the practical rather than the classical lines of study. The more progressive of the school boards are approaching them from below. The auxiliary schemes for education in manual labor, which have been adopted in some of our own board schools, point to an increasing tendency on the part of the educational authorities in our large towns to make the elementary school the stepping stone to a school of technical instruction. The race is to the swift. We wish good speed to the Technical School which has grown out of the Mechanics' Institute. It is at any rate a race in which the results, however they fall, must be satisfactory in the sum. The greater the emulation, the greater the net gain to the public in the course of time.

Address by Mr. B. Samuelson, M. P.

The Manchester Technical School was formally opened last evening by Mr. Bernard Samuelson, M. P., chairman of the Royal Commission on Technical Education. Our readers are familiar with the successive steps by which the Technical School has grown out of the Mechanics' Institution. The school really came into existence in December last. Since that time the work of perfecting the structural and other arrangements at the Mechanics' Institution has gone steadily on, and is now practically finished. Meanwhile a number of classes have been held, and the prizes won by the students were distributed last night. The new session begins on Monday next. The departments will be as follows: Day and evening commercial and scientific school for boys; science school; classes for drawing and design; technical school. There was a crowded attendance last evening. The president, Mr. Oliver Heywood, occupied the chair, and he was supported by John Slagg, M. P., Dr. Roscoe, Mr. Philip Magnus, Mr. Swire Smith (member of the Royal Commission), Dr. Greenwood (vice-chancellor of Victoria University), Mr. George Lord (president of the Manchester Chamber of Commerce), Dr. Watts (chairman of the council), the mayor of Manchester (Mr. Alderman Hopkinson), Mr. T. G. Ashton (Hon. Secretary), Mr. Gilbert R. Redgrave, Mr. James Heywood, Mr. James Murgatroyd, Mr. John Craven, Mr. James Worthington, Mr. Barton Wright, Mr. Samuel Armitage, Mr. Alderman Bailey, Mr. W. Gee, Mr. W. Richardson (Bolton), Mr. A. J. Pearce, Mr. W. P. Norris, Mr. F. Smith (Manchester and Salford Equitable Co-operative Society), and others.

The chairman, in opening the proceedings, said the period of transition was now passed, and it was the Manchester Technical School which was being opened that night. On the 27th December of last year the Manchester Mechanics' Institution became by the votes of the members of the Manchester Technical School and Mechanics' Institution, and a new council was appointed, consisting of ex-officio members belonging to the town council and members representing various other public bodies in Manchester and Salford. On the council, too, were representatives of the Victoria University, the Owens College, the school board, the schools of art, and the various industries of the place. A sum of £7,400 had been promised in subscriptions and donations extending over a period of three years. Originally £7,500 was asked for, so that practically the sum which the community was then invited to give had been given, and in many cases with very great generosity, and in a manner to give them great

encouagement in their work. [Applause.] Of the £7,400, the debt upon the old i stitution—incurred, let it always be remembered, in the endeavor to promote and develop technical classes—absorbed £2,200, alterations would take about £1,500, t mechanical and engineering department about £800, other departments £300, a some £3,000, a thousand a year for three years, was the amount which was deem requisite to meet the actual expenses of carrying on the establishment. He had to s frankly that the council had found the work to grow under their hands, and it w now certain that the sum originally asked for and supplied by the public would n suffice for the work. A further sum of about £2,500 was needed to give adequa development to their plans, and enable them to carry out their proposals with conf dence. In other words, the £7,400 would probably substantially do that which w originally purposed, but £2,500 more might be set against the old debt, which ha practically been extinguished, so that, in order that the school might be absolutel free from debt, this £2,000 odd should be forthcoming in further subscriptions. Th building had lent itself satisfactorily on the whole to the alternations required, whic were, however, not yet complete. Thirty-one classes had been established in scienc subjects, 18 in technology, 19 in commercial subjects, and 6 in drawing and desig making a total of 74. Over 600 individual students attended the classes in scienc and technology, and 400 attended the classes for commercial subjects last sessio He wanted to give prominence to the desire which the council felt that they shoul for the next two or three years, be free of anxiety upon money matters, and he hop this statement would bring contributions, and would have the effect of encouragin the public to give the school a larger amount of help. Slowly the institution technical schools was taking root among us; one town after another was movin in the matter, and this indicated that there was a feeling that the members of th Technical Commission had something to tell us which it was worth our while t listen to, and he hoped that what would fall from the lips of the commissioners pre ent would be helpful to the council in indicating how they might still further exten their usefulness. The experience of the last few years convinced him that a larg and increasing number of artisans were feeling the need of technical schools, an he, and those who worked with him, were anxious to supply that need. Some peopl might say, and with truth, that a great deal more money must be spent upon th school if any real good was to be achieved. Manchester was moving in the rig direction, and as the £7,500 which the council had asked for had been provided, he ha every reason, regarding the character of that meeting and of those present, to fe confident that this work was one that was taking a hold upon the interests and sym pathy of the community. The work was certainly deserving of encouragement an support. [Applause.]

Mr. Reynolds read the following report upon the results of the examination of 188

"The council have to report that the results of the examinations in connection wit the science and art department and the City and Guilds of London Institute sho an advance upon those of last year, and that during the past four years there ha been a steady improvement in the successes of the students at the science and art e aminations, as the following comparison will show:

Years.	Honors.		Advanced.		Elementary.		Total.
	First.	Second.	First.	Second.	First.	Second.	
1880	1	0	15	42	51	125	2
1881	0	4	12	38	61	161	2
1882	0	7	19	59	83	176	3
1883	2	3	33	51	83	182	3

Increase over 1880, 119; increase over 1881, 77; increase over 1882, 9.

ART.

Years.	Excellent.	Passed.	Total.
1880	12	23	
1881	14	43	
1882	8	30	
1883	18	52	

Increase over 1880, 35; increase over 1881, 13; increase over 1882, 32.

The council have also to report that there is a slight increase over last year in the number of certificates obtained at the examinations of the City and Guilds of London Institute. There is, however, a diminution in the number of medals obtained, namely, four against seven. It is scarcely to be expected that the school can always maintain a high standard against the increasing number of students who sit for these examinations, because many of them are either experts or students from colleges of high scientific standing. It may be noted that the three highest medals of the institute in the ordinary grade for bleaching, dyeing, and printing were awarded to students of this school, and that the first silver medal in honors was awarded to a student of the school class in carriage-building. Mr. John Fox, a student of long standing with us, has been successful in obtaining a royal exhibition for three years, value £150, tenable at the Royal College of Science, Dublin. He has also succeeded in obtaining the Allan and Newton memorial prize of £5 12*s.* 8*d.* in books, which is annually awarded by the science and art department in competition to members or sons of members of trade societies connected with the engineering trades, in the subjects of steam, machine construction, mathematics, and theoretical and applied mechanics. Mr. W. A. Rogerson, the holder of the Manchester and Salford Equitable Co-operative Society's local exhibition at the Dublin Royal College of Science, has pursued his studies with such diligence as to be successful in obtaining the second scholarship of the college of £50 a year for two years, and has further succeeded in obtaining a Whitworth scholarship, value £100. Two other students of the school, namely, Mr. James Bradshaw, who has recently obtained an appointment under the Indian state railways as inspector of machinery for Leeds district, and Mr. F. V. Whitehead, have also been successful in obtaining Whitworth scholarships, each of the value of £100. The council has again to acknowledge the kind liberality of the Manchester Equitable Co-operative Society, and of the president of the school, Mr. Oliver Heywood, for their contributions to the establishment of two £50 local exhibitions. The Equitable Co-operative Society's exhibition has been awarded to Mr. Edward Gardner, and that of Mr. Heywood has, with Mr. Heywood's consent, been given to Mr. Thomas A. Peace, in renewal of his exhibition for another year at the Owens College. It is most satisfactory to note that the career of the students who during the past two years have held these local exhibitions has been in all respects most satisfactory. They have all secured most creditable positions in the examinations of their respective colleges, and have also won substantial pecuniary rewards. The council regret that the science and art department should not permit these one-year local exhibitioners to compete for the royal exhibition and national scholarships. Such a regulation seems opposed to all sound policy, since it must be desirable to encourage the best prepared students to compete for and hold these three years' exhibitions or scholarships in order to complete their education. Three students of the school were this year offered by the department of science and art free studentships for three years at the Royal School of Mines, London, without maintenance allowance, but the condition that they should live in London made the offer in each case totally useless, and thus none of these students could avail themselves of it. This difficulty would be overcome if the department would agree to recognize such of the duly qualified local colleges of science as are suitable for the reception of such students. The school has been very successful in obtaining some of the chief exhibitions of the Union of Lancashire and Cheshire Institutes. Mr. W. Utley has gained the Roscoe exhibition of £10 for three years, Mr. Edward Gardner the Thomasson exhibition of £10 for three years, and Mr. E. Bentz the Mather exhibition of £10 for two years. All these are tenable at the Owens College evening classes. The first scholarship in commercial French has been awarded to Alexander Anderson, and the first scholarship in commercial German to Mr. William Hulme. The first prize for shading from the cast has been awarded to Mr. James Cain, the first prize for an original drawing of a group of flowers to Mr. Max Hempel, and the first prize for an original design for a wall bracket to Mr. R. Dickenson. Mr. W. H. Utley would also take the special magnetism prize, but is disqualified by reason of his taking the Roscoe scholarship. The scholarship in bleaching, dyeing, and printing is awarded to Mr. J. C. Robinson. The following students receive free studentship of the institution for one year, entitling them to join three ordinary Science classes or the School of Art: Thomas Savage, Ernest Bentz, W. C. Burton, A. Frankish, Boddy, W. H. Utley, Herbert Turner, W. Hulme, R. H. Cruess.

Mr. Samuelson, who was received with applause, expressed his satisfaction that the working people of the country were taking a great and increasing interest in the question of technical instruction. The commission to which reference had already been made was engaged in a work of great importance to the English workingman. They had undertaken to inquire into the mode in which the industrial schools of this and other countries were prepared to carry out the great work in which they were engaged, and to inform themselves and the public what was the result of the training given in those schools. He wished them to remember that England depended upon her position as a great manufacturing country. Some nations—the Americans, for in-

stance—had within themselves everything required to feed and clothe their people. The same might be said of France, and, indeed, of every southern country, where the wants of human beings were much less than in this comparatively cold northern clime. To those countries it was not of so much importance whether they were able to attain or maintain an industrial position, but that was not the case with England. After we had made the most of everything that our soil produced, we were still obliged to obtain from other nations food, which, besides grain, included sugar, tea, and coffee, and generally the articles which furnished the breakfast table, to the extent of something like 170,000,000 per annum, and the textile fabrics which we produced were insufficient to the extent of something like 60,000,000 per annum to clothe our people. In other words, we were indebted to foreign nations for from 220,000,000 to 230,000,000 sterling per annum for the means of clothing and feeding our people. The figures he had mentioned did not include hops, wines, spirits, or, indeed, anything that could be considered luxuries, but simply those things which might be considered essential to the comfort of the people. In order to pay for these things the soil of England produced in coal and iron and wool, and in the labor which was put into those articles to render them fit for export, the sum of 60,000,000 per annum. The result was that to the extent of something like 110,000,000 or 120,000,000 per annum they were indebted to foreign nations until we could repay them by our work as artisans and carriers. From that they would see that every family in the United Kingdom, but for the work we do for foreign nations, would be deprived of food and clothing to the extent of something like £15 or £16 per year, and as the large proportion of that deprivation would fall upon the working classes, he ventured to think that the amount would be nearer £20 or £25 per year, rather than the lesser sum he had mentioned. Unless, then, we could maintain the position which we hold as a great industrial nation, starvation was literally staring us in the face! It was therefore natural that they should take a deep interest in the work of the commission of which he was a member. As one result of the inquiries made by that commission, he believed that England still held a position of supremacy amongst the industrial nations. They had found that France, Italy, and more especially Switzerland and Germany had made great progress in industrial arts, greater progress perhaps than we ourselves had done. They had excellent machine shops and factories, but there was in the main no great branch of industry in which we were excelled at this moment by the foreigners, and we had in our great factories technical schools which in their way were not to be equaled by any nation in the world. [Applause.] At the same time they had found that the nations of the Continent had attained the position at which they had arrived in a great measure, thanks to their technical schools, and they had come to the conclusion that as they now had workshops, if not quite equal, at any rate nearly equal to ours, and as they had technical schools which were sown broadcast to an extent which we had not yet equaled, it behooved us to look well to our laurels, and to take care that if we were defective in anything which could contribute to keep us in the fore front we should lose no time in supplying it. He said that we were still in the first rank as an industrial nation, and he could give figures to prove it, but he would only mention the one fact that during the year 1882 we exported machinery from this country to the extent of twelve millions sterling. But, on the other hand, we must remember that that machinery was exported to countries which were to use it in rivalry with ourselves. [Hear, hear.] We all knew that wages were higher with us than on the Continent, that the hours of labor were longer on the Continent than they were with us, and it was an encouraging fact that with all this we should be in the position which he had described. He thought we were apt to depreciate what was being done here. In the weaving schools, and generally in the schools for textile manufactures which they had seen abroad, the best machinery and that upon which the greatest reliance had been placed was generally that which had emanated from our own workshops. [Applause.] There were some fallacies in regard to the question of technical education abroad, and the most remarkable one was that foreign workmen were better educated than our own. That was true to this limited extent, that in all that related to art manufactures the education of the workman in France and Belgium was spread over a larger area than it was with us, but it did not hold good with other countries, and to suppose that the average workman of the Continent had received a superior technical education to that of the workman of this country was a mistake altogether, and one which he thought, for the sake of encouraging our own workmen, ought not to be allowed to go uncontradicted. It was desirable that our workmen should understand that they really were not behind in this respect, and that if they would only put their shoulders to the wheel they had as good a chance at this moment of acquiring a sound technical education as the workmen of any other country. [Applause.] He said as good, but he might have said a better chance, because there was not in any country in the world, so far as he was aware, any system by which rewards were held out to working men to educate themselves technically like the rewards which were held out by the Science and Art Department or the City and Guilds of London Institute. [Applause.] But having said this of workmen, he was

bound to add that, with regard to the managers of great industrial establishments, the sources open to them of acquiring technical knowledge on the Continent were superior to those which prevailed in this country, and when he spoke of technical knowledge he included in that term more than was ordinarily included in it, because he considered a knowledge of languages and of commercial geography was as much a part of the technical instruction of a manufacturer as instruction in mathematics and chemistry. [Applause.] Foreign workmen, he said, had not at this moment means of technical instruction equal to ours, but all foreign countries were earnestly endeavoring to give that instruction to their workmen, and unless we profited by the opportunities we had, and the further opportunities which the rising generation would have, we should in this respect be left behind. And this applied not only to the nations of the Continent, but also to the United States of America, whose manufacturers and engineers he must consider, at any rate in all the mechanical arts, as our greatest rivals. Another feature which was deserving of notice, and which had been noticed by the persevering and anxious guardians of elementary instruction in this city, was the teaching of handicraft in elementary schools, and those who had taken it up were satisfied with the experiment, and believed that the influence of instruction in schools in the use of tools was destined to make progress and to be of great utility in various ways, not the least of which was that it would make the boys appreciate the dignity of labor, and be less ready to rush into commercial employment. [Applause.] The Manchester Technical School, and other institutions of a like nature, showed that not only the manufacturers, but the industrial population of this country were alive to the great advantages which they would gain from technical instruction. What there was in Manchester existed also in Nottingham, Sheffield, Birmingham, Bradford, Huddersfield, Leeds, and, above all, Glasgow. The Allan Glen School might well serve as a type of the day school which was connected with the Manchester school, and in the Andersonian University, and other institutions of a kindred kind, there were admirable examples of the instruction which artisans might obtain in evening classes. The Oldham Science School also afforded another excellent example. He had no doubt the small sum of money which Mr. Heywood had stated would be required in order to make the school complete would be easily supplied, but all towns were not so fortunate as Manchester, and even in Manchester it was desirable that institutions of that kind should not be dependent upon entirely voluntary contributions [applause]; and he could not help thinking that a great point would be gained if the municipal corporations of the United Kingdom were enabled to contribute out of the rates such a sum as might be necessary to supplement voluntary effort for the purpose of establishing, maintaining, and extending institutions of that kind. [Applause.] It might be useful if he indicated what was the best course to be pursued by a young man who intended to adopt an industrial pursuit. The students must be divided into two classes, (1) those who in after life would take prominent positions, such as masters or managers, and (2) those who would be workmen or foremen. There were two extremes to be avoided. On the Continent the students remained at the technical school until they were twenty-one, twenty-two, and sometimes twenty-three years of age. Nothing, in his opinion, could be more fatal to our industrial position than to follow this example; but we must also avoid the other extreme, which was that of sending a boy at the age of fourteen or sixteen years into the workshop entirely unprepared by any theoretical knowledge of the subjects with which he would have subsequently to practically deal. Our first object ought to be to improve our secondary schools and introduce into them instruction in foreign languages and economic geography, which were essential to every commercial man; and if to that were added instruction in mathematics and some of the physical sciences, the boys would be well prepared for technical instruction in colleges like the Owens College, where he would let the students remain until they were about nineteen years of age, when, well armed with theoretical knowledge, they could enter the factory, and, if they were wise, continue their studies in the evening classes like those furnished at the Manchester Technical School. If they did all this, the young men of Manchester would fit themselves better for an industrial career than they would if they adopted the course pursued in Germany and France. With regard to those who were to be workmen and foremen, it could not be expected that they could remain at school until they were fifteen, sixteen, or seventeen years of age; and, therefore, he rejoiced to think that in our admirable board school boys of fourteen years of age had opportunities of obtaining instruction in the rudiments, at any rate, of those sciences which lay at the bottom of the career to which they would hereafter devote themselves; and, if he had any recommendation to make to those interested in school-board education, it would be that particular stress should be laid upon the teaching of mechanical drawing in those schools. [Hear.] Then, when these lads went to work, let them continue their studies in the evening schools. He thought that by means of scholarships more extensive means should be provided to enable young men to pass from the schools to such institutions as Owens College. [Hear, hear.] Unfortunately, the most important subjects taught in technical schools were not always the best

paying ones, and he thought it was most desirable that the teachers should no dependent entirely upon what was called "payment by results"; and it was ch with that view that he was anxious that there should be some permanent provision u which teachers might rely, for if this existed a better style of men would be sec as teachers. He believed that it was of great importance that the higher techr colleges should be situate in what he might call an industrial atmosphere, becau was desirable that both the students and the teachers should live in such an at phere. It was desirable that the teachers should never "lose touch" of the indus which were founded upon the sciences which they taught. He was glad to find the necessity for theoretical instruction was becoming more and more appreciate this city and in all our large industrial centers, and he felt convinced that if all t who were engaged in industrial pursuits would put their shoulders to the wheel would endeavor to perfect themselves in all points, not merely of practice but of th also, this country had no need to fear that it would decline from the great indus position which it held at the present moment. [Applause.]

Mr. Slagg, who was received with applause, said he regarded the establishmer a technical school in Manchester as a very important and hopeful event. [Hear, he Manchester was generally regarded as being in the forefront in all that related to mercial progress and enterprise, but in this matter they had not been so quick in t movements as some of their neighbors; but he had no doubt that now they taken up the subject and recognized its importance, they would go heartily to w to perfect and establish a system of education which would do them the ut credit. He expressed surprise that any one should still be found to impugn the ut of technical education, but he would ask them, did we contribute our full shar manufactured materials which we ought to, and which we used to make in very n larger quantities than they did now. We had in this country an enormous trad the exportation of machinery, and if we sent machinery to our competitors to en them to compete with us on the best terms, they had a parallel duty imposed u them of using their own machinery in the best way and keeping pace with the petition which we have had our share in creating. He was able to indorse what Samuelson had said on the subject of the industries of this country, that in the st mechanical branches we had no substantial rivals abroad. An exception had made in artistic and, to some extent, in scientific productions, and in the applica of design to industry, and of chemical science, to dyeing and other cognate in tries, we had much to learn, and he was happy to find that the appliances prov by that institution were calculated to supply those deficiencies. He trusted the ployers of labor would be induced to assist the school, and if they did the institu would speedily take the prominent position which it deserved to occupy. Mr. S uelson had mentioned one or two items which were likely to be mentioned in th port of the commissioners. Another matter which would probably be included in document was a suggestion for an application of local rates for the furtheran technical education. Those gentlemen who had taken an active part in the wo establishing that school must, he was sure, be tired of going to the same small g of people for their supplies. He did not conceive it right that in a town like chester education should be dependent to such a large extent on voluntary aid. sooner they obtained some contributions from the public funds towards that ins tion the better it would be. He called attention to the fact that a library rate o penny in the pound produced in this city £9,000 a year to be spent upon library poses, and even a smaller sum than that would be a valuable aid to that school. hoped that one of the conclusions of the commission would be a recommendati Parliament to impose a rate for that very laudable object. [Cheers.] He concl by congratulating the meeting upon the happy augury which was presented t Manchester public by the establishment of that technical school. [Applause.]

Professor Roscoe pointed out that they did not intend in that school to teach a t nor even the economic use of a machine. They would teach the principles on wh machine was constructed, and the method upon which it might be used, and ena man who had to use that machine to obtain a technical knowledge of its purpose processes. In the various schools on the Continent they had seen many of grea tent, in which very excellent work was being done, but he did not think they seen better schools than existed in this country. We were now on the right and we only required the institutions now in existence to be extended in order we might be able to do as good a work as was being done on the Continent. O Continent the technical schools were mainly state establishments. In England is not the case, if exception was made of one or two schools in the metropolis w might be classed in that way. What was wanted was that the people should de state aid for so laudable an object, and he did not hesitate to say that Mr. Slag other members of Parliament who would help him would be able to inforce th mand. [Cheers.]

Mr. Magnus said that it appeared to him that the establishment of that school up a lacuna in the educational institutions of this city of which they might w

proud. They were supplying a want which was very generally felt in other large towns in the kingdom. They had an excellent grammar school—one of the best in the country—where valuable scholarships existed, and besides this they had a university which affords facilities for higher instruction, for original research, and for what Prof. Ray Lankester aptly called the "creation of new knowledge." What seemed to him to be wanted was further facilities and opportunities for the instruction of artisans in those subjects germane to the occupations in which they were every day engaged, and this want the establishment of this school would be, he believed, the means of meeting. Speaking of their university he did not believe that there would be any kind of competition whatever between a school like that and the university. Indeed, he believed that the day classes of that school would be found to be important feeders for the classes of the Owens College, to which the students would go to obtain the higher instruction which it was not the object of that institution to provide. Moreover, he anticipated that the establishment of that school would enable the professors of the university to maintain that high standard of teaching which was so essential for its success and development. In that school it would be the aim of the technical teacher constantly to keep in view the requirements and wants of his pupils, and to address his teaching as far as possible to the satisfaction of those wants. One could not glance at the comprehensive programme of instruction of that institution without appreciating the great advantage a school like that would afford in enabling workmen and foremen to acquire a knowledge of the principles of their trade. The eagerness with which such knowledge was received when offered in a form in which it could be readily assimilated, was shown by the great increase in the number of classes which had taken place within the last few years in almost all the great industrial centers in this country. This he ascribed to some extent to the depression of trade, but still more to the effect of the education act of 1870, which had called into being a class of fairly well educated and intelligent operatives, who felt a desire for and the necessity of further instruction, and who themselves knew what kind of teaching was best adapted to their own wants. Nowhere had he found a system of evening technical instruction, which, for its thoroughness and completeness, could compare with that which for many years had been carried out by the science and art department, and which recently had been supplemented by the City and Guilds of London Institute examination in technology. [Applause.] It was true that in many towns on the Continent the number of students in attendance at these classes was vastly in excess, he might say incomparably in excess, of the number attending such classes in any towns of the same population in this country, and this he ascribed to the fact that abroad the manufacturers took very much greater interest than they did here in the education of the workmen they employed. Things in this country were beginning to mend, and he hoped the time was not far distant when manufacturers in different towns would try to rival one another in the opportunities they offered and in the facilities they afforded to the workmen they employed for scientific and technical instruction. [Applause.]

Mr. Swire Smith said he thought that the Manchester people might be fairly congratulated on the work of elementary education being very efficiently done in the city, knowing that it was the basis upon which all other education must be built. But he would point out that even in Lancashire, of those entered on the registers of the schools, only 68 per cent. were in average attendance. In Manchester he believed the average was 73, but did that not show that, although they had done so much, there was yet very much to be done even in regard to elementary education? In the Canton of Zurich the average was 95, and, further, they found that in Switzerland and Germany when children left school, at thirteen or fourteen years of age—generally the latter—they were required to attend school two evenings a week for two years, so that they should not forget what they had learned. Between the ages of thirteen and twenty-one there were in Manchester 40,000 young people, but he found that in the total the attendance at night schools was 10,000. This was cause for great congratulation, but still there were 30,000 young people of an age to profit by evening instruction, and whom we might fairly assume had time to attend classes. What had become of them? Perhaps most of the girls were employed at home in domestic matters for their improvement, but he did not think they could give so good an account of the great proportion of the boys. There were no operatives of Europe who had more leisure time than those of Manchester, and probably there were none in the world who worked so hard and so efficiently; but he might fairly plead on behalf of the council, and of all who were interested in the welfare of Manchester, that at least some portion of those 30,000 should enroll themselves in the evening classes connected with the technical school. He denied that the English working people were deficient in taste. Englishmen had as good a faculty for art and design as had the foreigners, but not the same chance of developing it. What we needed was that advantages should be given by which the people could cultivate the talents which they undoubtedly possessed. [Applause.]

Mr. Samuelson then distributed the prizes which had been gained at the Govern-

ment science and art examinations, the examinations of the Union of Lancashire Cheshire Institutes, and the technological examination of the City and Guilds of L don Institute, after which the mayor of Manchester proposed a vote of thanks to Samuelson and his colleagues.

Dr. Watts, in seconding the motion, which was cordially adopted, said he was e nently satisfied with the result of the canvass for that institution. He never was ceived with more heartiness and never had fewer refusals, and on the whole it been a work of delight. He had no more doubt about the extra £2,000 coming t he had about the £7,400 already got. [Applause.]

Mr. Samuelson responded, and proposed a vote of thanks to the chairman, wh was seconded by Mr. Lord, and carried by acclamation.

PRODUCTION AND CONSUMPTION OF TOBACCO IN AUSTRIA.

REPORT BY CONSUL-GENERAL WEAVER, OF VIENNA.

I have recently received a communication from a citizen of Milwa kee, Wis., requesting certain statistical data in reference to the prod tion and consumption of tobacco in Austria, in order to enable him prepare a report on the tobacco raised and consumed on the globe.

As I should regard the granting of the above request a violation paragraph 570 of Consular Regulations, and the instructions contain in your circular dated March 31, 1883, I beg to transmit the data soug to the Department to the end that such disposition may be made there as may appear proper.

The production and consumption of tobacco in Austria, as compil from official sources for 1882 and 1881, were as follows:

Classification.	1882.	1881.
Production ..... kilograms ..	2, 496, 000	3, 069,
Cigars:		
Home manufactured ..... number	1, 141, 767, 905	1, 067, 902,
Imported ..... do	4, 542, 689	4, 788,
Total cigars ..... do	1, 146, 310, 594	1, 072, 691,
Cigarettes ..... do	122, 690, 535	81, 088,
Snuff ..... kilograms ..	2, 190, 595	2, 163,
Smoking ..... do	23, 921, 471	23, 630
Value of sales ..... florins	66, 939, 202	63, 240

It should be noted that the importation, manufacture, and sale tobacco in Austria is a Government monopoly, and that only by spec permit of the Government can manufactures of tobacco be import while the importation of raw tobacco is exclusively under the direct of Government officials.

In 1882 the importation of leaf tobacco for Government manufact was 6,124,400 kilograms, against 10,121,500 kilograms in 1881; and t exportation of raw tobacco in 1882 amounted to 4,098,700 kilogra against 6,597,100 kilograms in 1881.

It might be remarked also that as the habit of chewing tobacco d not exist in this country, chewing-tobacco does not form any part of t manufactures of Austria.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, December 29, 1883.

LABOR AND WAGES IN ITALY.

REPORT BY CONSUL WELSH, OF FLORENCE.

Knowing that the relative condition of the industrial classes in the United States, as compared with the industrial classes in other countries, is at this time a subject of much interest to the people of the United States, I venture to submit to the Department the following statements, as the result of investigation.

The tables appended will show the salaries and wages given from the highest civil, military, and naval officer to the ordinary uneducated day-laborer.

These tables are collected from official and reliable sources.

The question as to whether it would not be beneficial to control by law the right of employing women and children has been open since 1875, and attempts have been unsuccessfully made to pass a law to control such labor.

Both on the 14th February, 1877, and the 25th July, 1879, circulars were addressed by the minister of agriculture, industry, and commerce to the prefects of the kingdom, but the replies to the circulars were not such as to indicate that the employers would be willing that a law controlling female and children's labor should go into force.

The Government then decided to submit the question to the different chambers of commerce in a circular dated November 20, 1883, viz:

1st. Whether the employment of children should not be entirely forbidden until the age of nine years had been reached.

2d. That they then should only work a half day, five or six hours per day, until the age of twelve or fourteen years.

3d. Whether, after that age, it would not be beneficial to prohibit their employment on Sundays and at night-time until the age of sixteen.

The opinions expressed by the different chambers of commerce may be described as follows:

1st. To prohibit entirely the employment of children at manual labor until they may have arrived at the age of ten years; to forbid their employment on Sundays or at night-time until they may have arrived at the age of fifteen years.

2d. To organize committees in the provinces to superintend the execution of the law.

It is to be hoped that such action will be taken that the employment of children may be controlled, and then many at present unavoidable abuses done away with.

In regard to employment throughout Italy at present, women work at spinning and weaving (silk, cotton, and wool), in hemp and paper mills, and in this district principally in making straw plaits and braids. They are also largely employed in the fields and vegetable gardens or truck patches.

One finds children working at all trades, but few are under ten years of age.

The average hours of work are: Fifteen hours from the twenty-four in the summer, with two hours for meals allowed from the fifteen; twelve hours from the twenty-four in the winter, with one hour and a half for meals allowed from the twelve.

Except in foundries, where the necessity exists, and night and day hands are employed, night work after 9 o'clock is the exception.

Sundays are universally used by the working-classes as days of recreation; and the more important holidays, with what are called name days, or the day of the saint the children take their names from, are strictly observed, particularly in the South of Italy.

In and in the neighborhood of Florence, women are paid from 10 to 22 cents per day, children from 10 to 40 cents per week, or for odd jobs 10 to 17 cents per day; the ordinary labor of men is valued at from 30 to 60 cents per day.

In woolen mills the hands employed are males to females as 60 to 40. In cotton mills women predominate in the same ratio. In the straw trade 80 women are employed to every 20 men.

In regard to the general health of the working classes in Tuscany it can be said to be good. However, certain trades produce certain diseases, just as in the United States or elsewhere, and here in the cities and towns a lack of proper nourishment may add to the tendency to disease.

Drunkenness prevails but to a slight extent among the working classes. The prevailing vice is gambling. Gambling is nourished by the Italian Government in its weekly lotteries, which are always attractive to the poor.

The predominating religion is the Roman Catholic, and in Tuscany the working classes pay much attention to their religious duties, although swearing and obscene language are dreadfully prevalent.

The food of the workmen is simple in the extreme and its staple throughout Italy is the polenta, which corresponds to our Indian meal. A cup of bad coffee in the early morning serves till noon, when a meal of bread beans, cooked in olive oil or hog's grease, or polenta, boiled or fried, with a small allowance of wine, is eaten, and the pranzo, or dinner, is taken in the evening when work is finished, and is of very much the same nature as the noon-day meal, with the exception that some salted fish or pork is added, with cabbage or other greens.

I append a table showing about the amount of food eaten by an adult, and the approximate cost thereof.

Fresh meat is but seldom eaten, even by the skilled mechanic. Vegetables and fruit, however, are at times so plentiful as to be accessible to the poorest. Maccaroni, which is popularly supposed in America to be the staple food of Italy, is in reality only accessible to the comparatively rich.

The farmers and farm-laborers in Tuscany, in many cases, arrive at a great age, and are generally very healthy. In the cities the average life is lower.

A dispatch sent the Department under date of the 13th December, 1883, and numbered 47, will have given an insight into the death-rate and the prevailing diseases in this district.

The table, No. 3, will show the approximate number of people employed in the several industries, and with soldiers, Government and railway employés, and prisoners they constitute about one-sixth of the population.

The laboring classes are generally well and neatly clad, taking usually the thrown-off clothes of their superiors and arranging them to fit themselves. The local costumes, which were very picturesque, are things of the past, except in some few localities in the South.

The working classes are not well housed; indeed, they are miserably housed, living in the country in damp, badly ventilated hovels, and in the cities crowded together in large but badly ventilated and drained

houses in the worst quarters. With all these drawbacks they are cleanly, and may also be said to be healthy.

The working classes cannot be said, as yet, to be educated, but more attention is given each year to the education of the masses.

Enlisted or drafted men in the army are not allowed to leave the colors until able to read and write, and a system of schools throughout the country is about to be adopted for the compulsory education of all children. Steps in this direction have to be taken cautiously by the Government, as strong prejudices exist in the minds of the people against a liberal education, and in the minds of some against any education whatever, except that which is inculcated by the Church.

WM. L. WELSH,
Consul.

UNITED STATES CONSULATE,
Florence, Italy, February 11, 1884.

Report on salaries and wages in Italy, particularly the district of Florence.

CIVIL OFFICERS.

Grade.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Ministry of the interior.				
Director-general of the prisons	.....	9,000.00	1,800 00	And perquisites.
Directors chief of division	First	7,000.00	1,400 00	Do.
	Second	6,000.00	1,200 00	Do.
Inspectors-general	First	7,000.00	1,400 00	Do.
	Second	6,000.00	1,200 00	Do.
Chief sections	First	5,000.00	1,000 00	Do.
	Second	4,500.00	900 00	Do.
First secretaries	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.
Secretaries	First	3,000.00	600 00	Do.
	Second	2,500.00	500 00	Do.
	Third	2,000.00	400 00	Do.
ACCOUNTANTS.				
Director chief	.....	6,000.00	1,200 00	Do.
Auditors	First	5,000.00	1,000 00	Do.
	Second	4,500.00	900 00	Do.
Accountants	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.
	Third	3,000.00	600 00	Do.
Clerks	First	2,500.00	500 00	Do.
	Second	2,000.00	400 00	Do.
UNDER OFFICERS.				
Directors	.....	4,000.00	800 00	Do.
Archives keepers	First	3,500.00	700 00	Do.
	Second	3,000.00	600 00	Do.
	Third	2,500.00	500 00	Do.
Clerks	.....	2,000.00	400 00	Do.
Civil service.				
Prefects	First	12,000.00	2,400 00	Dwelling, servants, perquisites, and entertainment fund.
	Second	10,000.00	2,000 00	Do.
	Third	9,000.00	1,800 00	Do.
Counselors	First	7,000.00	1,400 00	Do.
	Second	6,000.00	1,200 00	Do.
Vice-prefects and counselors	First	5,000.00	1,000 00	Dwelling, servants, and perquisites.
	Second	4,500.00	900 00	Do.
Vice-prefects and counselors, second category.	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.

Report on salaries and wages in Italy, particularly the district of Florence—Continued.

CIVIL OFFICERS—Continued.

Grade.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Secretaries	First	3,000.00	600 00	And perquisites.
	Second	2,500.00	500 00	Do.
	Third	2,000.00	400 00	Do.
Under secretaries		1,500.00	300 00	Do.
Accountants	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.
Clerks	First	2,500.00	500 00	Do.
	Second	2,000.00	400 00	Do.
	Third	1,500.00	300 00	Do.
UNDER OFFICERS.				
Archives keepers	First	3,500.00	700 00	Do.
	Second	3,000.00	600 00	Do.
Clerks	First	2,000.00	400 00	Do.
	Second	1,500.00	300 00	Do.
Council of state.				
Under secretaries	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.
Clerks	First	3,000.00	600 00	Do.
	Second	2,500.00	500 00	Do.
	Third	2,000.00	400 00	Do.
Archives of state.				
Chief archives keepers	First	7,000.00	1,400 00	Do.
	Second	6,000.00	1,200 00	Do.
First archives keepers	First	5,000.00	1,000 00	Do.
	Second	4,500.00	900 00	Do.
Archives keepers	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.
	Third	3,000.00	600 00	Do.
Under archives keepers	First	2,500.00	500 00	Do.
	Second	2,000.00	400 00	Do.
	Third	1,500.00	300 00	Do.
Registrars	First	3,000.00	600 00	Do.
	Second	2,500.00	500 00	Do.
	Third	2,000.00	400 00	Do.
Copyists		1,500.00	300 00	Do.
Prisons.				
Directors	First	5,000.00	1,000 00	Dwelling, fuel, servants, and perquisites.
	Second	4,500.00	900 00	Do.
	Third	4,000.00	800 00	Do.
	Fourth	3,500.00	700 00	Do.
Vice-directors		3,000.00	600 00	Do.
Accountants		2,500.00	500 00	And perquisites.
Clerks	First	2,000.00	400 00	Do.
	Second	1,500.00	300 00	Do.
Hospitals for venereal diseases.				
Directors	First	3,500.00	700 00	And perquisites.
	Second	3,000.00	600 00	Do.
Accountants		2,500.00	500 00	Do.
Clerks	First	2,000.00	400 00	Do.
	Second	1,500.00	300 00	Do.
Public surety.				
Chiefs of police	First	7,000.00	1,400 00	Traveling expenses, uniform, and perquisites.
	Second	6,000.00	1,200 00	Do.
Inspectors	First	5,000.00	1,000 00	Do.
	Second	4,000.00	800 00	Do.
	Third	3,500.00	700 00	Do.
Vice-inspectors, 1st category	First	3,000.00	600 00	Do.
Delegates, 2d category	First	3,000.00	600 00	Do.
Vice-inspectors, 1st category	Second	2,500.00	500 00	Do.
Delegates, 2d category	Second	2,500.00	500 00	Do.
Vice inspectors, 1st category	Third	2,000.00	400 00	Do.
Delegates, 2d category	Third	2,000.00	400 00	Do.
2d category	Fourth	1,500.00	300 00	Do.

Report on salaries and wages in Italy, particularly in the district of Florence—Continued.

CIVIL OFFICERS—Continued.

Grade.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Administration of the royal Italian lottery.				
Directors	First	6,000.00	1,200 00	And perquisites.
	Second	5,500.00	1,100 00	Do.
	Third	5,000.00	1,000 00	Do.
Chief, section	First	5,000.00	1,000 00	Do.
	Second	4,500.00	900 00	Do.
Under directors		4,000.00	800 00	Do.
Chief secretaries		4,000.00	800 00	Do.
Secretaries	First	3,500.00	700 00	Do.
	Second	3,000.00	600 00	Do.
Vice-secretaries	First	2,500.00	500 00	Do.
	Second	2,000.00	400 00	Do.
	Third	1,500.00	300 00	Do.
Chief accountants		4,000.00	800 00	Do.
Accountants	First	3,500.00	700 00	Do.
	Second	3,000.00	600 00	Do.
Assistant accountants	First	2,500.00	500 00	Do.
	Second	2,000.00	400 00	Do.
	Third	1,500.00	300 00	Do.
First comptrollers	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.
	Third	3,200.00	640 00	Do.
Second comptrollers	First	2,800.00	560 00	Do.
	Second	2,500.00	500 00	Do.
Comptrollers' clerks	First	2,000.00	400 00	Do.
	Second	1,800.00	360 00	Do.
	Third	1,500.00	300 00	Do.
	Fourth	1,200.00	240 00	Do.
Stamping clerks	First	1,100.00	220 00	Do.
	Second	1,000.00	200 00	Do.
	Third	900.00	180 00	Do.
Porters		800.00	160 00	Do.
Royal Italian telegraphs.				
Director-general		9,000.00	1,800 00	Do.
Inspectors-general		8,000.00	1,600 00	Do.
Auditor		7,000.00	1,400 00	Do.
Directors, chief of divisions		6,000.00	1,200 00	Do.
Directors of compartments		5,500.00	1,100 00	Do.
Inspectors		5,000.00	1,000 00	Do.
Under inspectors		3,000.00	600 00	Do.
Chief of sections		4,000.00	800 00	Do.
Secretaries		3,000.00	600 00	Do.
Chief of offices		2,500.00	500 00	Do.
Assistants		1,500.00	300 00	Do.
Female assistants		1,000.00	200 00	Do.
Clerks		1,200.00	240 00	Do.
Mechanics		2,500.00	500 00	Do.
Wire guards		960.00	192 00	Do.
Porters		1,100.00	220 00	Do.
Messengers				Lire 0.15 = $0.03 each telegram.

ARMY.

Rank.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
General		15,000	3,000	Entertainment fund and perquisites.
Lieutenant-general		12,000	2,400	Do.
Major-general		9,000	1,800	And perquisites.
Colonel		7,000	1,400	Do.
Lieutenant-colonel		5,200	1,040	Do.
Major		4,400	880	Do.
Captain		3,200	640	Do.
Lieutenant		2,200	440	Do.

Report on salaries and wages in Italy, particularly the district of Florence—Continued.

ARMY—Continued.

Rank.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Underlieutenant		1,800	360	And perquisites.
Band master	First	1,225	245	Do.
	Second	1,005	201	Do.
Quartermaster major		925 to 1,000	185 to 200	Do.
Quartermaster		725 to 800	145 to 160	Do.
Sergeant trumpeter		690 to 760	138 to 152	Do.
Sergeant		615 to 690	123 to 138	Do.
Corporal major		480 to 560	96 to 112	Do.
Corporal trumpeter		445 to 500	89 to 100	Do.
Corporal		410 to 490	82 to 98	Do.
Trumpeter		390 to 470	78 to 94	Do.
Second corporal		370 to 450	74 to 90	Do.
Pioneer		370 to 410	74 to 82	Do.
Musician		390 to 450	78 to 90	Do.
Soldier		355 to 435	71 to 87	Do.
Carabiniers.				
Marshal		1,225 to 1,465	245 to 293	Do.
Quarter marshal		1,005 to 1,250	201 to 250	Do.
Brigadier		840 to 1,085	168 to 217	Do.
Vice-brigadier		715 to 935	143 to 187	Do.
Carabinier		695 to 920	139 to 184	Do.
Apprentice		435 to 635	87 to 127	Do.
Professors and teachers of military schools.				
Professors of literature and science.	First	4,000	800	Do.
	Second	3,500	700	Do.
	Third	3,000	600	Do.
Assistants professors of literature and science.	First	2,500	500	Do.
	Second	2,000	400	Do.
Professors or teachers of drawings.	First	3,000	600	Do.
	Second	2,500	500	Do.
	Third	2,000	400	Do.
Assistants professors or teachers of drawings.	First	1,500	300	Do.
	Second	1,000	200	Do.
Military justice.				
Advocate-general		12,000	2,400	Do.
Substitute advocate-general	First	8,000	1,600	Do.
	Second	7,000	1,400	Do.
Fiscal advocate	First	6,000	1,200	Do.
	Second	5,000	1,000	Do.
Substitute fiscal advocate	First	3,500	700	Do.
	Second	3,000	600	Do.
	Third	2,500	500	Do.
Instructor officers				According to their grade.
First secretary		5,000	1,000	And perquisites.
Secretary	First	3,500	700	Do.
	Second	3,000	600	Do.
Under secretary	First	2,500	500	Do.
	Second	2,000	400	Do.
Clerk		1,500	300	Do.
Military apothecaries.				
Inspector chemist		5,000	1,000	Do.
Director chemist		4,500	900	Do.
Chief apothecaries	First	4,000	800	Do.
	Second	3,500	700	Do.
Apothecaries	First	3,000	600	Do.
	Second	2,500	500	Do.
	Third	2,000	400	Do.
	Fourth	1,500	300	Do.
Accountants of artillery and engineers.				
Auditor	First	5,000	1,000	Do.
	Second	4,000	800	Do.
Comptrollers	First	3,500	700	Do.
	Second	3,000	600	Do.
Accountants	First	2,500	500	Do.
	Second	2,000	400	Do.

Report on salaries and wages in Italy, particularly the district of Florence—Continued.

ARMY OFFICERS—Continued.

Rank.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Technical office of artillery and engineers.				
Chief technical officer	First	4,000	800	And perquisites.
	Second	3,500	700	Do.
	Third	3,000	600	Do.
Assistant technical officer	First	2,500	500	Do.
	Second	2,000	400	Do.
Geographical and topographical engineers.				
Chief geographical engineer	First	5,000	1,000	Do.
	Second	4,000	800	Do.
Geographical engineer	First	3,500	700	Do.
	Second	3,000	600	Do.
Assistant engineer	First	2,500	500	Do.
	Second	2,000	400	Do.
Chief topographical officer		5,000	1,000	Do.
Topographical officer	First	4,000	800	Do.
	Second	3,500	700	Do.
Assistant officer	First	3,000	600	Do.
	Second	2,500	500	Do.
Copyist	First	1,400	280	Do.
	Second	1,200	240	Do.
	Third	1,000	200	Do.
Messenger		1,000	200	Do.

NAVY.

Rank.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Admiral		15,000.00	3,000 00	Perquisites, 3,000 lire, or $600; entertainment fund.
Vice-admiral		12,000.00	2,400 00	Do.
Rear admiral		9,000.00	1,800 00	Do.
Captain of man-of-war		7,000.00	1,400 00	Perquisites, 400 lire, or $80; entertainment fund.
Captain of frigate		5,200.00	1,040 00	Perquisites, 300 lire, or $60; entertainment fund.
Captain of sloop		4,400.00	880 00	Do.
Lieutenant of man-of-war		3,200.00	640 00	Perquisites, 300 lire, or $60.
Under lieutenant of man-of-war		2,200.00	440 00	Perquisites, 200 lire, or $40.
Marine guard		1,800.00	360 00	Do.
Captain of frigate		5,200.00	1,040 00	Perquisites, 1,200 lire, or $240.
Captain of sloop		4,400.00	880 00	Do.
Lieutenant		3,200.00	640 00	Perquisites, 1,000 lire, or $200.
Under lieutenant		2,200.00	440 00	Perquisites, 900 lire, or $180.
Marine guard		1,800.00	360 00	Do.
Comptroller		3,500.00	700 00	
Accountant		3,000.00	600 00	
First assistant accountant		2,500.00	500 00	
Second assistant accountant		2,000.00	400 00	
Chief apothecary		3,000.00	600 00	
Apothecary	First	2,500.00	500 00	
	Second	2,000.00	400 00	
Professor of literature and science	First	4,000.00	800 00	And perquisites.
	Second	3,500.00	700 00	Do.
	Third	3,000.00	600 00	Do.
Assistant professor of literature and science.	First	2,500.00	500 00	Do.
	Second	2,000.00	400 00	Do.

Report on salaries and wages in Italy, particularly the district of Florence—Continued.

NAVY—Continued.

Rank.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Professor of drawing	First	3,000.00	600 00	And perquisites.
	Second	2,500.00	500 00	Do.
	Third	2,000.00	400 00	Do.
Assistant professor of drawing	First	1,500.00	300 00	Do.
	Second	1,000.00	200 00	Do.
Inspector and captain of port		7,000.00	1,400 00	Do.
Captain of port	First	6,000.00	1,200 00	Do.
	Second	5,000.00	1,000 00	Do.
	Third	4,500.00	900 00	Do.
Officer of port	First	3,500.00	700 00	Do.
	Second	3,000.00	600 00	Do.
	Third	2,500.00	500 00	Do.
Clerk		2,000.00	400 00	Do.
First technical officer	First	4,000.00	800 00	Do.
	Second	3,500.00	700 00	Do.
	Third	3,000.00	600 00	Do.
Technical officer	First	2,500.00	500 00	Do.
	Second	2,000.00	400 00	Do.
Under technical officer		1,500.00	300 00	Do.
CREW.				
Mariners:				
Pilot	First	1,115.00	223 00	And found.
Do	Second	910.00	182 00	Do.
Do	Third	765.00	153 00	Do.
Second pilot		585.00	117 00	Do.
Under pilot		475.00	95 00	Do.
Mariner A B	First	335.00	67 00	Do.
Do	Second	300.00	60 00	Do.
Do	Third	215.00	43 00	Do.
Boys		75.00	15 00	Do.
Quartermasters:				
Head steersman	First	1,115.00	223 00	Do.
Do	Second	910.00	182 00	Do.
Do	Third	765.00	153 00	Do.
Second steersman		585.00	117 00	Do.
Under steersman		475.00	95 00	Do.
Steersman		335.00	67 00	Do.
Cannoniers:				
Head cannonier	First	1,115.00	223 00	Do.
Do	Second	910.00	182 00	Do.
Do	Third	765.00	153 00	Do.
Second cannonier		585.00	117 00	Do.
Under cannonier		540.00	108 00	Do.
Cannonier	First	380.00	76 00	Do.
Do	Second	335.00	67 00	Do.
Torpedo-men:				
Head torpedo-man	First	1,115.00	223 00	Do.
Do	Second	910.00	182 00	Do.
Do	Third	765.00	153 00	Do.
Second torpedo-man		585.00	117 00	Do.
Under torpedo-man		540.00	108 00	Do.
Torpedo-man	First	380.00	76 00	Do.
Do	Second	335.00	67 00	Do.
Machinists and firemen:				
Machinist	First	1,500.00	300 00	Do.
Do	Second	1,320.00	264 00	Do.
Do	Third	840.00	168 00	Do.
Head fireman		585.00	117 00	Do.
Under fireman		475.00	95 00	Do.
Fireman	First	365.00	73 00	Do.
Do	Second	330.00	66 00	Do.
Help machinist		215.00	43 00	Do.
Assistants on board	First	1,115.00	223 00	Do.
	Second	910.00	182 00	Do.
	Third	765.00	153 00	Do.
Workmen:				
Foreman	First	1,115.00	223 00	Do.
Do	Second	910.00	182 00	Do.
Do	Third	765.00	153 00	Do.
Under foreman		475.00	95 00	Do.
Workman	First	395.00	79 00	Do.
Do	Second	330.00	66 00	Do.
Musicians and trumpeters:				
Bandmaster		1,115.00	223 00	Do.
Under chief		765.00	153 00	Do.

rt on salaries and wages in Italy, particularly the district of Florence—Continued.

NAVY—Continued.

Rank.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
ians and trumpeters—Continued.				
hief trumpeter		585.00	117 00	And found.
nder chief trumpeter		475.00	95 00	Do.
usician and trumpeter		335.00	67 00	Do.
seers of infirmary:				
verseer of infirmary	First	1,115.00	223 00	Do.
Do	Second	910.00	182 00	Do.
Do	Third	765.00	153 00	Do.
econd overseer of infirmary		585.00	117 00	Do.
nder chief of infirmary		475.00	95 00	Do.
urses	First	335.00	67 00	Do.
Do	Second	300.00	60 00	Do.

RAILWAY EMPLOYÉS.

Employés.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
of section	First	6,600.00	1,320 00	Pension after 25 years' service and perquisites.
	Second	6,000.00	1,200 00	Do.
pector, central	First	6,000.00	1,200 00	Do.
	Second	5,400.00	1,080 00	Do.
retary	First	4,200.00	840 00	Do.
retary, keeper of archives		3,600.00	720 00	Do.
retary	Second	3,000.00	600 00	Do.
	Third	2,400.00	480 00	Do.
of registrar		2,400.00	480 00	Do.
istant registrar		2,400.00	480 00	Do.
hnical secretary		3,000.00	600 00	Do.
per of technical archives		1,800.00	360 00	Do.
f clerks		2,100.00	420 00	Do.
ks	First	1,800.00	360 00	Do.
	Second	1,500.00	300 00	Do.
	Third	1,200.00	240 00	Do.
l counselors		12,000.00	2,400 00	Do.
tary inspectors		2,000.00	400 00	Do.
ticians		960.00	192 00	Do.
accountants		6,000.00	1,200 00	Do.
rolling inspectors		4,200.00	840 00	Do.
stant accountants		3,600.00	720 00	Do.
engers	First	1,380.00	276 00	Do.
	Second	1,200.00	240 00	Do.
keeper		1,200.00	240 00	Do.
engers	Third	1,080.00	216 00	Do.
	Fourth	960.00	192 00	Do.
ers		840.00	168 00	Do.
f cashier		3,000.00	1,600 00	Do.
stant cashier	First	3,600.00	720 00	Do.
	Second	3,300.00	660 00	Do.
ks	First	3,000.00	600 00	Do.
	Second	2,400.00	480 00	Do.
	Third	2,100.00	420 00	Do.
	Fourth	1,800.00	360 00	Do.
	Fifth	1,500.00	300 00	Do.
naster		3,300.00	660 00	Do.
stant paymaster		2,400.00	480 00	Do.
f services		12,000.00	2,400 00	Do.
er chief		10,000.00	2,000 00	Do.
ectors of section		6,600.00	1,320 00	Do.
er inspectors		6,000.00	1,200 00	Do.
ectors of line		3,600.00	720 00	Do.
stant inspectors of line		2,100.00	420 00	Do
ributer of cars		2,100.00	420 00	Do.
f stations		3,000.00	600 00	Do.
f stations, first category	First	2,700.00	540 00	Do.
f stations, second category	...do	2,400.00	480 00	Do.
f stations, first category	Second	2,100.00	420 00	Do.
f stations, second category	...do	1,800.00	360 00	Do.

Report on salaries and wages in Italy, particularly the district of Florence—Continued.

RAILWAY EMPLOYÉS—Continued.

Employés.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Chief stations	Third	1,500.00	300 00	Pension after 25 years' service.
	Fourth	1,200.00	240 00	Do.
Managers	First	2,700.00	540 00	Do.
	Second	2,400.00	480 00	Do.
Chief clerks		2,100.00	420 00	Do.
Clerks	First	1,800.00	360 00	Do.
	Second	1,500.00	300 00	Do.
	Third	1,200.00	240 00	Do.
Guards and laborers		1,080.00	216 00	Do.
Clerks, registrars of the movable material		1,080.00	216 00	Do.
Assistants, registrars of the movable material.		825.00	165 00	Do.
Assistants, registrars of merchandise	First	1,200.00	240 00	Do.
	Second	1,080.00	216 00	Do.
Guardian of merchandise		915.00	183 00	Do.
Chief	First	1,200.00	240 00	Do.
	Second	1,080.00	216 00	Do.
Under chief		915.00	183 00	Do.
Chief guards		1,080.00	216 00	Do.
Guards		730.00	146 00	Do.
Guard's interpreters		1,100.00	220 00	Do.
Chief travelers		2,400.00	480 00	Do.
Comptrollers of trains		1,500.00	300 00	Do.
Conductors	First	1,200.00	240 00	Do.
	Second	1,080.00	216 00	Do.
Convoys	First	1,020.00	204 00	Do.
	Second	900.00	180 00	Do.
Brakemen		780.00	156 00	Do.
Assistant brakemen		730.00	146 00	Do.
Porter's brakemen		865.00	161 00	Do.
Weighers of luggage		805.00	161 00	Do.
Chief lamplighters and lampists	First	1,825.00	365 00	Do.
	Second	1,095.00	219 00	Do.
	Third	1,025.00	205 00	Do.
	Fourth	915.00	183 00	Do.
Lamplighters		805.00	161 00	Do.
Gas workmen	First	1,825.00	365 00	Do.
	Second	1,095.00	219 00	Do.
Porters	First	730.00	146 00	Do.
	Second	620.00	124 00	Do.
W keepers		182.50	36 50	Do.
Engineer, chief of service		12,000.00	2,400 00	Do.
Engineer, chief of traction		6,600.00	1,320 00	Do.
Engineer, chief of material		6,600.00	1,320 00	Do.
Engineer, chief of office		4,800.00	960 00	Do.
Engineers, inspectors, chief	First	6,000.00	1,200 00	Do.
	Second	5,400.00	1,080 00	Do.
Chief engineer of workshops		6,000.00	1,200 00	Do.
Engineer of traction		4,200.00	840 00	Do.
Engineer	First	3,600.00	720 00	Do.
	Second	3,000.00	600 00	Do.
	Third	2,400.00	480 00	Do.
Assayer		2,400.00	480 00	Do.
Chief designer		3,300.00	660 00	Do.
Designer	First	2,100.00	420 00	Do.
	Second	1,800.00	360 00	Do.
	Third	1,500.00	300 00	Do.
First accountant		4,800.00	960 00	Do.
Accountant	First	3,600.00	720 00	Do.
	Second	3,000.00	600 00	Do.
	Third	2,400.00	480 00	Do.
Copyists		1,095.00	219 00	Do.
Chief of workshops	First	4,800.00	960 00	Do.
	Second	3,600.00	720 00	Do.
	Third	3,000.00	600 00	Do.
Foremen, superintendent		3,600.00	720 00	Do.
Foremen	First	3,000.00	600 00	Do.
	Second	2,700.00	540 00	Do.
	Third	2,400.00	480 00	Do.
	Fourth	2,100.00	520 00	Do.
Chief depot	First	3,300.00	660 00	Do.
	Second	3,000.00	600 00	Do.
	Third	2,700.00	540 00	Do.
Under chief depot		2,400.00	480 00	Do.
Machinists	First	2,040.00	408 00	Do.
	Second	1,805.00	360 00	Do.
	Third	1,560.00	312 00	Do.
	Fourth	1,320.00	264 00	Do.

Report on salaries and wages in Italy, particularly the district of Florence—Continued.

RAILWAY EMPLOYÉS—Continued.

Employés.	Class.	Per year.		Remarks.
		Lire.	Dollars.	
Firemen	First	1,080.00	216 00	Pension after 25 years' service.
	Second	960.00	192 00	Do.
	First	1,560.00	312 00	Do.
	Second	1,320.00	264 00	Do.
	Third	1,080.00	216 00	Do.
Chief pointsmen	First	1,095.00	219 00	Do.
	Second	683.50	136 70	Do.
First pointsmen		620.50	124 10	Do.
Pointsmen	First	547.50	109 50	Do.
	Second	511.00	102 20	Do.
	Third	474.50	94 90	Do.
Guardians	First	584.00	116 80	Do.
	Second	547.50	109 50	Do.
Female guardians		146.00	29 20	Do.
Chief of telegraphic service		7,200.00	1,440 00	Do.
Inspectors and secretaries		3,600.00	720 00	Do.
Accountants	Second	3,000.00	600 00	Do.
Clerk's accountants	First	1,800.00	360 00	Do.
	Second	1,500.00	300 00	Do.
Chief clerks		2,100.00	420 00	Do.
Telegraphic clerks	First	1,800.00	360 00	Do.
Telegraphic clerks	Second	1,500.00	300 00	Do.
	Third	1,200.00	240 00	Do.
Daily laborers		1,095.00	219 00	Do.
Mechanics' watchmen	First	1,800.00	360 00	Do.
	Second	1,500.00	300 00	Do.
Wire guards		1,095.00	219 00	Do.
Messengers	First	1,025.00	205 00	Do.
	Second	912.50	182 50	Do.
	Third	730.00	146 00	Do.
Warehouse keeper	First	3,600.00	720 00	Do.
	Second	3,000.00	600 00	Do.
	Third	2,700.00	540 00	Do.
Assistant keeper		2,400.00	480 00	Do.
Chief clerks		2,100.00	420 00	Do.
Clerks	First	1,800.00	360 00	Do.
	Second	1,500.00	300 00	Do.
	Third	1,200.00	240 00	Do.
Coal carriers		730.00	146 00	Do.
Carriers		730.00	146 00	Do.

Employés.	Per day.		Remarks.
	Lire.	Dollars.	
Railway workshops—material and traction.			
Adjusters	2.40 to 5.20	0 48 to 1 04	
Turners	1.80 to 6.00	0 36 to 1 20	
Toolkeepers	2.00 to 5.20	0 40 to 1 04	
Steelyard-makers	2.60 to 4.00	0 52 to 0 80	
Forgers	2.40 to 6.00	0 48 to 1 20	
Braziers	1.60 to 6.00	0 32 to 1 20	
Blacksmiths' assistants	2.00 to 2.60	0 40 to 0 52	
Coppersmiths	3.00 to 5.50	0 60 to 1 10	
Iron-founders	2.40 to 5.00	0 48 to 1 00	
Carpenters	1.60 to 5.50	0 32 to 1 10	
Sawyers	2.40 to 3.60	0 48 to 0 72	
Varnishers	2.00 to 6.00	0 40 to 1 20	
Trunk-makers	2.00 to 4.60	0 40 to 1 92	
Lamp-makers	1.00 to 6.00	0 20 to 1 20	
Elevator hands	2.20 to 4.00	0 44 to 0 80	
Examiners	3.00 to 3.40	0 60 to 0 68	
Anointing hands	2.60 to 2.80	0 52 to 0 56	
Polishers	2.20 to 3.20	0 44 to 0 64	
Laborers	1.80 to 4.40	0 36 to 0 88	
Guards	2.20 to 3.00	0 44 to 0 60	
Railway depots—material and traction.			
Adjusters	1.20 to 5.00	0 24 to 1 00	
Turners	2.00 to 4.20	0 40 to 0 84	
Toolkeepers	2.00 to 3.40	0 40 to 0 68	
Riggers	3.80 to 4.80	0 76 to 0 96	

Report on salaries and wages in Italy, particularly the district of Florence—Continued.

RAILWAY EMPLOYÉS—GENERAL TRADES.

Employés.	Per day.		Remarks.
	Lire.	Dollars.	
Railway depots—material and traction—Cont'd.			
Forgers	2.40 to 4.80	0 48 to 0 96	
Braziers	2.80 to 4.80	0 56 to 0 96	
Blacksmiths' helpers	2.00 to 2.40	0 40 to 0 48	
Coppersmiths	1.80 to 4.20	0 36 to 0 84	
Carpenters	2.40 to 5.40	0 48 to 1 08	
Varnishers	2.60 to 3.40	0 52 to 0 68	
Trunk-makers	2.80 to 3.80	0 56 to 0 76	
Lamp-makers	1.00 to 3.80	0 20 to 0 76	
Elevator hands	2.00 to 3.60	0 40 to 0 72	
Examiners	2.40 to 4.40	0 48 to 0 84	
Anointing hands	2.00 to 3.25	0 40 to 0 65	
Polishers	1.80 to 3.00	0 36 to 0 60	
Laborers	1.80 to 3.40	0 36 to 0 68	
Lamplighters	2.00 to 3.00	0 40 to 0 60	
Divers	0.60 to 2.80	0 12 to 0 56	
Guards	2.00 to 3.00	0 40 to 0 60	
Watchmen	2.40 to 2.60	0 48 to 0 52	
Porters	2.00 to 3.00	0 40 to 0 60	
Foreman	6.00	1 20	
Assistant	4.00	0 80	
Night guards	2.40	0 48	
Day guards	2.00	0 40	
Iron-planer	2.80 to 3.00	0 56 to 0 60	
Iron-sawyer	2.60	0 52	
Trepanning hands	1.80 to 2.00	0 36 to 0 40	
Corporal adjuster	4.20	0 84	
forger	4.20	0 84	
brazier	4.20	0 84	
carpenter	4.20	0 84	
sawyer	3.00	0 60	
laborer	3.00	0 60	

GENERAL TRADES.

Apothecaries' employés	2.50 to 4.50	0 50 to 0 90	
Bakers	2.00 to 4.00	0 40 to 0 80	
Bar-tenders	2.50 to 3.00	0 50 to 0 60	
Barbers	3.00 to 4.00	0 60 to 0 80	
Bedstead makers	3.00 to 4.00	0 60 to 0 80	
Bell-hangers	2.50 to 3.50	0 50 to 0 70	
Blacksmiths	3.00 to 3.50	0 60 to 0 70	
Blacksmiths' helpers	1.50 to 2.50	0 30 to 0 50	
Bootblacks	1.50 to 3.50	0 30 to 0 70	Earnings.
Book-keepers	3.50 to 10.00	0 70 to 2 00	
Book-binders	3.00 to 5.00	0 60 to 1 00	
Boot and shoe makers	2.00 to 4.50	0 40 to 0 90	
Bottlers	2.50 to 3.50	0 50 to 0 70	
Boys of 14 years or over	0.50 to 1.00	0 10 to 0 20	
Bricklayers	2.50 to 3.50	0 50 to 0 70	
Brewers' hands	2.50 to 3.50	0 50 to 0 70	
Bridge-builders	2.75 to 4.00	0 55 to 0 80	
Brush and broom makers	1.00 to 2.25	0 20 to 0 45	
Burnishers and polishers	2.50 to 4.00	0 50 to 0 80	
Butchers	2.00 to 4.00	0 40 to 0 80	
Butter-makers	1.75 to 2.75	0 35 to 0 55	
Brick-makers	3.25 to 3.75	0 65 to 0 75	
Brickyard hands	2.00 to 3.00	0 40 to 0 60	
Box-makers	2.00 to 3.50	0 40 to 0 70	
Builders	2.50 to 3.75	0 50 to 0 75	
Card-makers	2.25 to 3.25	0 45 to 0 65	
Cabmen	4.00 to 6.00	0 80 to 1 20	Average gaining.
Coachmen, hired	90.00 to 120.00	18 00 to 24 00	Per month.
Cigar-makers, male	2.20 to 3.50	0 44 to 0 75	
Cigar-makers, female	0.80 to 1.75	0 16 to 0 35	
Coal carriers and stowers	1.50 to 2.50	0 30 to 0 50	
Compositors (printing)	3.00 to 9.00	0 50 to 1 80	
Confectioners' employés	3.50 to 4.50	0 70 to 0 90	
Cooks, male	2.00 to 4.00	0 40 to 0 80	With board.
Cooks, female	1.00 to 2.00	0 20 to 0 40	Do.
Cooks (pastry)	3.00 to 5.00	0 60 to 1 00	
Coopers	1.75 to 2.75	0 35 to 0 55	
Coppersmiths	3.00 to 3.75	0 60 to 0 75	
Curriers and tanners	2.50 to 3.50	0 50 to 0 70	

on salaries and wages in Italy, particularly the district of Florence—Continued.

Employés.	Per day.		Remarks.
	Lire.	Dollars.	
General trades—Continued.			
.....	2.50 to 4.00	0 50 to 0 80	
nakers	3.00 to 5.00	0 60 to 1 00	
rs	2.50 to 4.50	0 50 to 0 90	
painters	2.50 to 4.50	0 50 to 0 90	
builders	2.50 to 4.00	0 50 to 0 80	
trimmers	2.25 to 4.25	0 45 to 0 85	
.....	4.00 to 12.00	0 80 to 2 40	
akers	1.75 to 2.50	0 35 to 0 50	
.....	2.00 to 5.00	0 40 to 1 00	
hers (kitchen servants)	0.50 to 1.00	0 10 to 0 20	With board.
s	2.50 to 4.50	0 50 to 0 90	
.....	2.25 to 3.75	0 45 to 0 75	
n	2.00 to 3.25	0 40 to 0 65	
s (civil)	6.00 to 12.00	1 20 to 2 40	
s	5.00 to 10.00	1 00 to 2 00	
orers	1.50 to 2.75	0 30 to 0 55	With board.
w-mills)	2.50 to 3.50	0 50 to 0 70	
n	1.50 to 3.00	0 30 to 0 60	
.....	2.00 to 2.75	0 40 to 0 55	
e polishers	3.00 to 5.00	0 60 to 1 00	
.....	4.00 to 8.00	0 80 to 1 60	
ainters	5.00 to 14.00	1 00 to 2 80	
ilders	2.50 to 3.00	0 50 to 0 70	
.....	2.75 to 3.75	0 55 to 0 75	
s	2.00 to 3.00	0 40 to 0 60	
and retort fitters	3.00 to 6.00	0 60 to 1 20	
hs	4.00 to 8.00	0 80 to 1 60	
.....	3.00 to 5.00	0 60 to 1 00	
ters	2.00 to 4.00	0 40 to 0 80	
tters	3.00 to 6.00	0 60 to 1 20	
kers, male	1.80 to 2.00	0 36 to 0 40	
kers, female	0.50 to 0.80	0 10 to 0 16	
ggers	2.00 to 3.00	0 40 to 0 60	
assistants	1.75 to 3.00	0 35 to 0 60	
.....	1.50 to 2.00	0 30 to 0 40	And found.
hs	4.00 to 7.00	0 80 to 1 40	
l rope makers	1.75 to 2.75	0 35 to 0 55	
makers	2.50 to 4.00	0 50 to 0 80	
.....	2.00 to 4.00	0 40 to 0 80	
epers	2.50 to 3.50	0 50 to 0 70	
ers	2.50 to 2.75	0 50 to 0 55	
-cleaners	2.50 to 3.00	0 50 to 0 60	
ners	1.50 to 3.00	0 30 to 0 60	
ters	5.00 to 15.00	1 00 to 3 00	
s (skilled workers in jewelry)	4.00 to 8.00	0 80 to 1 60	
hters	1.75 to 2.25	0 35 to 9 45	
s	1.80 to 2.00	0 36 to 0 40	
akers	2.00 to 3.50	0 40 to 0 70	
kers	2.00 to 3.00	0 40 to 0 60	
.....	2.50 to 3.50	0 50 to 0 70	
men	2.00 to 3.00	0 40 to 0 60	
ths	3.00 to 5.00	0 60 to 1 00	
men (employés of wood-yards)	2.50 to 3.50	0 50 to 0 70	
phers	3.00 to 6.00	0 60 to 1 20	
ive stokers	2.50 to 4.00	0 50 to 0 80	
sts	3.00 to 8.00	0 60 to 1 60	
cutters	5.00 to 7.00	1 00 to 1 40	
polishers	6.00 to 12.00	1 20 to 2 40	
.....	2.50 to 3.50	0 50 to 0 70	
sewers	1.00 to 1.50	0 20 to 0 30	
s-makers	3.00 to 4.00	0 60 to 0 80	
(cow and goat)	1.50 to 3.00	0 30 to 0 60	
.....	2.00 to 3.50	0 40 to 0 70	
(marble and coal workers with dynamite)	3.50 to 4.00	0 70 to 0 80	
ns (theatrical)	3.00 to 10.00	0 60 to 2 00	
(hospitals)	1.00 to 2.00	0 20 to 0 40	And found.
men	2.00 to 3.00	0 40 to 0 60	
sters	1.00 to 1.50	0 20 to 0 30	
.....	2.00 to 3.00	0 40 to 0 60	
s (house)	3.00 to 5.00	0 60 to 1 00	
s (sign)	4.00 to 5.00	0 80 to 1 00	
angers	2.50 to 4.00	0 50 to 0 80	
-makers	3.00 to 6.00	0 60 to 1 20	
ase makers	2.00 to 3.00	0 40 to 0 60	
ishers	3.50 to 7.00	0 70 to 1 40	
ey makers	3.00 to 6.00	0 60 to 1 20	
egulators	3.00 to 5.00	0 60 to 1 00	
achinists	3.00 to 4.00	0 60 to 0 80	

Report on salaries and wages in Italy, particularly the district of Florence—Contin

Employés.	Per day.		Remarks
	Lire.	Dollars.	
General trades—Continued.			
Piano sawyers and planers	2.50 to 3.50	0 50 to 0 70	
Picture-frame makers	3.00 to 8.00	0 60 to 1 60	
Plasterers	4 00 to 8.00	0 80 to 1 60	
Plumbers	3.00 to 4.50	0 60 to 0 90	
Porters	1.50 to 5 00	0 30 to 1 00	
Printers	3.00 to 5.00	0 60 to 1 00	
Puddlers in foundries	4.00 to 7.00	0 80 to 1 40	
Quarrymen	1.50 to 3.50	0 30 to 0 70	
Rope-makers	1.50 to 2.25	0 30 to 0 45	
Saw-mill hands	2.00 to 3.00	0 40 to 0 60	
Slate-roofers	2.00 to 3.50	0 40 to 0 70	
Stair-builders	3.00 to 3.50	0 60 to 0 70	
Stewards	2 00 to 3.00	0 40 to 0 60	With board.
Storemen	2.50 to 3.50	0 50 to 0 70	
Stonecutters	4.00 to 6.00	0 80 to 1 20	
Scourers	1.50 to 3.50	0 30 to 0 70	
Salesmen	1.50 to 2.50	0 30 to 0 50	
Sawyers	3.00 to 3.50	0 60 to 0 70	
Sheep-shearers	3.00 to 4.00	0 60 to 0 80	
Shepherds	0.50 to 0.75	0 10 to 0 15	Do.
Silversmiths	4.00 to 8.00	0 80 to 1 60	
Smelters	3.00 to 7.00	0 60 to 1 40	
Soap-makers	2.00 to 4.00	0 40 to 0 80	
Straw-braid makers	0.50 to 1.00	0 10 to 0 20	
Straw-hat sewers	0.60 to 1.20	0 12 to 0 24	
Straw bleachers and dyers	1.50 to 2.00	0 30 to 0 40	
Spinning:			
Overseers	27.50	5 50	Per week.
Head-pickers	12 00	2 40	Do.
Pickers	9.75	1 95	Do.
Oilers	12.00	2 40	Do.
Grinders	14.50	2 90	Do.
Drawers	6.50	1 30	Do.
Loom-finishers	8.00	1 60	Do.
Mule-spinners	19.50	3 90	Do.
Back-boys	4.50	0 90	Do.
Piecers	8.50	1 70	Do.
Elevator hands	8.75	1 75	Do.
Loom repairers	17.50	3 50	Do.
Card-shippers	11.00	2 20	Do.
Tailors	3.00 to 6.00	0 60 to 1 20	
Teamsters	1.50 to 2.50	0 30 to 0 50	
Teachers	4.00 to 10.00	0 80 to 2 00	
Tin-roofers	2.00 to 3.50	0 40 to 0 70	
Tinsmiths	2.50 to 3.50	0 50 to 0 70	
Track-layers	2.00 to 3.25	0 40 to 0 65	
Trunk-makers	3.00 to 4.50	0 60 to 0 90	
Turners (wood)	3.00 to 5.00	0 60 to 1 00	
Timbermen	2.00 to 3.00	0 40 to 0 60	
Upholsterers	3.50 to 5.00	0 70 to 1 00	
Undertakers	3.50 to 4.50	0 70 to 0 90	
Vineyard-men	1.50 to 2.50	0 30 to 0 50	With board.
Varnishers	3.00 to 4.00	0 60 to 0 80	
Wagon-makers	3.00 to 4.50	0 60 to 0 90	
Waiters	2.00 to 3.50	0 40 to 0 70	And found.
Warehouse-men	2.50 to 3.50	0 50 to 0 70	
Watchmakers	4.00 to 7.00	0 80 to 1 40	
Watchmen	2.50 to 3.50	0 50 to 0 70	
Well-diggers	3.00 to 5.00	0 60 to 1 00	
Wheelwrights	2.50 to 3.50	0 55 to 0 75	
Whip-makers	3.00 to 3.50	0 60 to 0 75	
Whitewashers	3.00 to 3.50	0 60 to 0 70	
Willow-workers	2.00 to 3.00	0 40 to 0 60	
Weaving:			
Overseers	27.50	5 50	Per week.
Intermediates	8.50	1 70	Do.
Speeder girls	8.50	1 70	Do.
Fly frames	8.50	1 70	Do.
Tack frames	8.50	1 70	Do.
Winders	3.50	0 70	Do.
Quilters	5.00	1 00	Do.
Slasher tenders	24.50	4 90	Do.
Slasher helpers	9.50	1 90	Do.
Drawing in colors	8.50	1 70	Do.
Drawing in white	7.25	1 45	Do.

Report of salaries and wages in Italy, particularly in district of Florence—Continued.

Employés'	Per year.		Remarks.
	Lire.	Dollars.	
General trades—Continued.			
Weaving:			
Weavers, plain	8.50	1 70	Per week.
Weavers, fancy	10.00	2 00	Do.
Dyers, plain	12.00	2 40	Do.
Dyers, fancy	14.50	2 90	Do.
Dyers, chain	12.00	2 40	Do.
Cloth-room hands	6.25	1 25	Do.
Firemen	18.75	3 75	Do.
Foundrymen	20.00	4 00	Do.
Masons	15.00	3 00	Do.
Painters	20.00	4 00	Do.

WAGES PAID TO SKILLED WORKMEN AND OTHERS EMPLOYED IN THE ARSENAL AT SPEZZIA.

Employés.	Per day.		Remarks.
	Lire.	Dollars.	
Asphalt-layer	4.00	0 80	
Boatman	3.00	0 60	
Boiler-maker	5.00	1 00	
Blacksmith and tinker	3.80	0 70	
Carpenter	4.50	0 90	
Caulker	4.50	0 90	
Cabinet-maker and sawyer	3.50	0 70	
Coppersmith	3.80	0 76	
Common laborer	2.00	0 40	
Diver, using his own machine, for every hour's work	2 50	0 50	
Diver, using Government machine, for every hour's work	1.00	0 20	
Glazier	3.50	0 70	
Head-gauger	5.00	1 00	
Male or female day-laborer	1.30	0 26	
Masons	3.50	0 70	
Miner	3.50	0 70	
Mechanic, skilled	6.00	1 20	
Painter and varnisher	3.50	0 70	
Stoker	3.00	0 60	
Stonecutter	4.00	0 80	
Whitewasher	3.40	0 68	

Market value of comestibles and necessaries in the city of Florence.

Articles.	Unit.	Lire.	Dollars.
Foreign wheat:			
First quality	Hectoliter*	22.62	4 53
Second quality	do	21.20 to 21.98	4 24 to 4 40
National wheat:			
First quality	do	23.15 to 23.55	4 63 to 4 71
Second quality	do	20.55 to 21.42	4 11 to 4 28
White tender wheat:			
First quality	do	20.41 to 20.80	4 08 to 4 16
Second quality	do	20.02	4 00
Red tender wheat, first quality	do	19.25 to 19.68	3 85 to 3 93
Assorted wheat	do	18.26 to 18.62	3 65 to 3 73
Rye	do	17.79	3 56
Clean barley	do	26.00	5 20
Indian corn	do	11.63 to 12.31	2 33 to 2 46
Oats	do	8.20 to 8.82	1 64 to 1 77
Millet	do	15.15 to 24.63	3 33 to 4 93
Beans, flat	do	16.42 to 17.10	3 29 to 3 42
Trichea	do	19.15 to 20.52	3 83 to 4 14
Big white beans	do	31.47	6 30
Middle white beans	do	30.78	6 16
Small white beans	do	28.73	5 75
Round beans with eye	do	24.63 to 26.00	4 93 to 5 20

*Hectoliter = 2.84 bushels.

Market value of comestibles and necessaries in the city of Florence—Continued.

Articles.	Unit.	Lire.	Dollars.
Chick peas	Hectoliter.*	24.63 to 25.31	4 93 to 5
Lentils	do	31.45	6
Lupines	do	9.58	1
Potatoes	Quintal†	10.00 to 13.00	2 00 to 2
Rice:			
First quality	do	58.50 to 60.90	11 70 to 12
Second quality	do	56.50	11
Third quality	do	55.50	11
Fourth quality	do	34.00	6
Chestnut flour	Kilogram‡	0.42	0
Wheat flour:			
First quality	do	0.54	0
Second quality	do	0.50	0
Third quality	do	0.45	0
Indian-corn flour	do	0.27 to 0.30	0
Paste:			
First quality	do	0.72	0
Second quality	do	0.60 to 0.66	0 12 to 0
Bread:			
First quality	do	0.45 to 0.48	0 09 to 0
Second quality	do	0.39 to 0.42	0 08 to 0
Third quality	do	0.33 to 0.36	0 07 to 0
Old common red wine	Hectoliter§	63.61 to 74.59	12 72 to 14
Common wine of the year:			
First quality	do	48.26 to 50.46	9 65 to 10
Second quality	do	39.49 to 43.87	7 90 to 8
Third quality	do	30.71 to 35.10	6 14 to 7
White wine	do	43.87 to 48.26	8 78 to 9
Vinegar	do	37.29 to 39.49	7 46 to 7
Sour olive oil	do	188.46	37
Sweet olive oil	do	179.48	35
Mercantile olive oil	do	167.52	33
Oil for burning	do	128.63	25
Olive husks	do	74.78	14
Buttor	Kilogram‡	3.20 to 3.50	0 64 to 0
Bacon	do	1.60 to 1.80	0 32 to 0
Sheep cheese	do	2.40 to 2.70	0 48 to 0
Eggs	Dozen	0.90 to 0.95	0 18 to 0
Refined petroleum	Liter‖	0.68 to 0.70	0 14 to 0
Veal meat	Kilogram‡	1.50 to 2.25	0 30 to 0
Beef meat	do	1.35 to 2.25	0 27 to 0
Hog meat	do	1.50 to 1.65	0 30 to 0
Sheep meat	do	0.90 to 1.50	0 18 to 0
Lamb meat	do	1.20 to 1.55	0 24 to 0
Moka coffee	do	4.80	0
Porto Rico coffee	do	4.00	0
San Domingo coffee	do	3.00	0
Sugar:			
First quality	do	1.60 to 1.80	0 32 to 0
Second quality	do	1.50 to 1.55	0 30 to 0
Dry chestnuts	Hectoliter*	24.33 to 26.88	4 87 to 5
Fresh chestnuts	do	13.04 to 15.00	2 61 to 3
Hay:			
First quality	Quintal†	13.00	2
Second quality	do	10.00 to 12.00	2 00 to 2
Straw, for stabling purposes	do	5.50	1
Fuel	Milligram¶	0.28 to 0.30	0 06 to 0
Fagots	100	0.28 to 0.30	0 06 to 0
Small fagots	100	0.20 to 0.22	0 04 to 0
Coal:			
First quality	Quintal†	12.00	2
Second quality	do	8.10 to 9.00	1 60 to 1

* Hectoliter=2.84 bushels. 26.42 gallons.
† Quintal=220.46 pounds.
‖ Liter=1.0567 quarts.
‡ Kilogram=2.2046 pounds.
¶ Milligram=22.045 pounds.
§ Hectoliter

Table showing about the amount of food eaten by an adult and the approximate cost thereof.

[One kilogram equal to 2.2046 pounds.]

Description.	Quantity.	Cost.	
		Lire.	Dollars.
Coffee or liquor		0.05	0 01
Bread	kilogram	0.700	0.25	0 05
Salted pork or fish	do	0.010	0.10	0 02
Cheese or fruit			0.10	0 02
Flour paste	kilogram	0.250	0.15	0 03
Red beans, cabbage, or other greens	do	0.100	0.05	0 01
Wine (one pint)			0.15	0 03
Total			0.85	0 17

Table showing the approximate number of people employed in the several industries.

Mechanical spinning	41,000	In the extraction of sulphur	20,000
Manufacture of ropes		Total	934,000
Weaving			
Cotton:			
Spinning	54,000	Agricultural class	8,266,000
Weaving	80,000	Soldiers, reserve and active	1,545,000
Woolen	550,500	Employés	400,000
Silk:		Students	3,070,000
Stretching	70,000	Prisoners	80,000
Spinning	75,000	Proprietors	765,000
Carding	6,500	Artisans and laborers (not before described)	1,740,000
In paper mills	14,000	Without profession	11,700,000
In mechanical industries (sundry)	10,000		
In porcelain manufactures	7,000	Total	28,500,000
In glass manufactures	6,000		

HOW AFFAIRS ARE CONDUCTED ON THE CONGO.

REPORT BY CONSUL DU VERGE, OF ST. PAUL DE LOANDO.

To settle at Congo, after having chosen a convenient location for one's affairs, the chiefs who are entitled to receive the duties or taxes are called. These taxes are in reality rents, as the negroes do not sell their lands and do not give them up, except for an annual or monthly payment. The tenant has, therefore, a right to his land just so long as he pays his tax or rent, which consists, besides the payment of installation, of rations to the king amounting to a gallon of rum and 8 yards of cotton cloth at the end of every month; and the persons whom the king is obliged to supply and for whom he is responsible are: Lingster (translator; comprador (purchaser); mafuca (body servant); and four servants (mocas). The duty of the lingster in a factory is to attend to the payment for produce, serve as interpreter in communicating with the natives, and keep his employer well informed with regard to the business done by his neighbors. The comprador serves to measure the produce, settle all difficulties arising from such measurements, and withdraw from each measure the countage (tax) going to the king. This countage consists of a plate of grain for every measure of the same, and about one or two gallons of oil to every measure of the same, which are set apart until there is sufficient to be measured, when the king goes to receive it. The mafuca oversees the work of the servants, and takes the place of the interpreter during the latter's absence. If one of these seven personages should, for any reason whatever, run away, the king

is obliged to return him or replace him, or lose all rights to his rations, taxes, &c., until he has replaced the runaway, and paid the robbery, if the departure be in consequence of robbery.

The manners and customs which have been introduced among the negroes by certain Europeans have rendered it impossible to trade with the natives without corredores. These act as couriers who, for a certain payment, and a supply of gin and spirits, lay in wait for the natives along the routes they take when bringing in produce for trade, and conduct them to the employer's factory. It often occurs that the negroes follow these corredores of their own free will; but it happens, also, that the negroes, when they will not follow them, are forced to go to the house of the employers; or when the corredor knows there is not a certain kind of goods at his factory and conducts the negroes or trade to another merchant's factory, he is in like manner bound by the slaves of his employer; for although slavery is abolished, there is any number of slaves to be found, some in chains, and others at liberty, in the Portuguese houses, as also in some foreign houses; so that the corredor becomes the slave of the white man unless his family is willing to pay an exorbitant price for his liberty. These abuses and violences are very often the reason why the trade route is often closed, as the natives, alarmed at the constant violence of the kroboys straggling along the routes, who hinder their free movements, have almost abandoned the Congo and go to sell their produce where they can move about freely, or they remain in their villages, where they cultivate only what is requisite and sufficient for their families. This is the reason why the Congo, on account of violence and injustice, from being one of the most productive rivers ten years ago, has become, comparatively speaking, completely abandoned by the natives.

The purchase of slaves continues at the values of £5 or £6 each. When they cannot be bought they are obtained in the following manner: An article or object of some kind is laid aside out of the way, but within reach of the negro, who at once steals it, and, being taken in *flagrante delicto*, becomes at once a slave. If he is a person of importance and is claimed by his relatives, or by the chiefs of the village to which he belongs, he is sometimes given up in exchange for two or three slaves, who take his place and lose thereby the liberty they enjoyed to become slaves in their village; these are put in chains and made to work under the lash and the rod. Should any Government therefore seriously wish to correct or avoid any further slavery in chains, bondage, and unjust punishments and secure free trade and make the Congo as productive as it was about ten or fifteen years ago, the following must be attended to: The corredores are the principal causes of the lack of trade, for, besides the wages which they receive and which can be given to the native trader, they embezzle the funds intrusted to their care. Some houses have more than 200 corredores; they receive a certain number of counters with numbers, corresponding to numbers with the name of the corredor entered in a book expressly kept for the purpose at the fetiche (the place where the trade is carried on and settled); the corredor generally receives 20 markers or counters for each case of gin or demijohn of spirits; each counter represents a measure. The corredor is present at the measuring, and accompanies the native trader, who receives an order for every measure that he measures at the fetiche; the corredor takes notes of these orders and sends a counter with each one, which is kept in a drawer until the number is complete. If the negro has done much trade through the intervention of the lingster, who pays in the fetiche, he will embezzle so much per measure. If the white man

ot consent to this robbery, the negro is robbed of like amount
assing through the village of the corredor, and the corredor pays
f by not giving an account of the goods which he received to at-
rade; and then goes to some other merchant. Ths kroboys are
mediately sent out on the different trade-routes, and the corrodor
very short time, taken and put in irons. The chief of the village
made responsible for the corredor and must pay for him. If the
kes no notice of it, men or women belonging to the same village
l and made to keep with the corredor, who is in chains. The
ad chiefs of the village are likewise responsible for the kroboys
white man if any of them run away. For the simple reason of
boys having passed through a village, the inhabitants thereof,
gh wholly innocent, are put in chains, and remain in chains until
man is returned, and until the villages through which he passed
aid for him.

is the way affairs are carried on at present on the Congo and
ves are procured at a moderate price, while it is publicly pro-
l at the same time that slavery is abolished.

L. DE R. DU VERGE,
Consul.

ED STATES CONSULATE,
St. Paul de Loanda, 1883.

NOTES.

British brands or marks on foreign manufactures and products.—customs officers at Liverpool recently seized several cases of gen men's furnishing goods of French manufacture, purchased in Fra by an American firm and shipped from France to the United States. Cherbourg and Weymouth, in bond to Liverpool, for New York, in b to Chicago, for violation of the revenue act of 1883, in that the arti of merchandise were marked "Balbriggan." The goods were relea upon representation by the American consul at Liverpool that the br was not intended to mislead or deceive, as, in the language of the davit of the Paris agent of the American purchasers—

The word *Balbriggan* is used in the United States for all brown or *ecru* cotto siery, viz: half-hose, hose, and underwear, whether made in France, Germany, o United Kingdom; that there is no manufacturer in Balbriggan who is making thing else but hosiery, no underwear being made there at all; French underwea been stamped *Balbriggan* for the last seven years, &c.

The cause of the seizure was that the goods being marked *Balbri* might be sold as English products.

In releasing the goods the board of customs commissioners wer opinion that the admissibility of the goods was *prima facie* a ma open to much question and that the customs officers would not l been justified in passing the article without submitting the case for board's decision.

With regard to Consul Packard's suggestion, that the good question being only *in transit* through England they had not l imported into that country in a sense rendering them liable to sei for infringement of the law relating to British marks, the board that

Under the law, goods "in transit" are stopped as strictly as goods for the l market; indeed, the prevention of goods manufactured abroad and bearing false ish marks being sent from British ports to foreign countries and to the colonies i of the chief objects of the law.

Consul Packard invites the attention of the Department to the l ish customs revenue acts covering this matter of British marks on eign products, believing that their publication would prevent a re rence of the detention of foreign goods for entry in the United St coming within the jurisdiction of Her Majesty's Government.

Consul Packard is informed that shippers of American product the United Kingdom unintentionally violate paragraph 4 of the r nue act of 1883, by putting British brands or marks thereon. paragraph referred to is as follows:

Names, addresses, and marks on boxes, cases, cards, or other things in which ar of foreign manufacture are imported, shall be deemed to be borne by the ar themselves.

The following paragraphs from the British customs laws are t referred to by Consul Packard as covering the question of British m or brands of foreign products, and whose publication the consul d necessary for the information of American importers and exporter

CUSTOMS LAWS CONSOLIDATION.

[39 and 40 Vict., ch. 36.]

A. D. 1876.

Goods prohibited to be imported.

The goods enumerated and described in the following table of prohibition restrictions inwards are hereby prohibited to be imported or brought into the U Kingdom, save as thereby excepted, and if any goods so enumerated and des

shall be imported or brought into the United Kingdom contrary to the prohibitions or restrictions contained therein, such goods shall be forfeited, and may be destroyed or otherwise disposed of as the commissioners of customs may direct.

* * * * * * *

Articles of foreign manufacture, and any packages of such articles bearing any names, brand, or mark being or purporting to be the name, brand, or mark of manufacturers resident in the United Kingdom, or any name, brand, or mark which states or implies that such articles were manufactured at any place in the United Kingdom.

Any name, brand, or mark which states or implies that any such articles were manufactured at a town or place having the same name as a place in the United Kingdom, shall, unless accompanied by the name of the country in which such place is situate, be deemed for the purpose of this section to state or imply that such articles were manufactured at a place in the United Kingdom.

Clocks and watches, or any other article of metal impressed with any mark or stamp representing or in imitation of any legal British assay, mark, or stamp, or purporting by any mark or appearance to be of the manufacture of the United Kingdom.

* * * * * * *

REVENUE ACT, 1883.

[46 and 47 Vict., ch. 55.]

* * * * * * *

Amendment of law relating to the customs.

The following enactments shall, on and after the first day of January, one thousand eight hundred and eighty-four, have effect as if they were contained in section forty-two of the customs consolidation act 1876, in substitution for the portion of that section repealed by this act, that is to say—

(1.) (*a*) Articles of foreign manufacture not imported by, or for, but bearing the name and address or name and trademark of a manufacturer of such articles resident, or having a place of business in the United Kingdom.

(*b*) Articles of foreign manufacture bearing, either alone or in conjunction with other names or words, the name of a part of, or a place in, the United Kingdom, which name in the opinion of the commissioners of customs has been placed upon such articles in order to impart to them a special character of British manufacture.

(2.) The proprietary right of a manufacture in any name or mark on any articles of foreign manufacture shall be proved or evinced in such manner and upon such conditions as the commissioners of customs shall prescribe.

(3.) Articles bearing the name of a place which would render them subject to prohibition under this section shall not be admissible by reason of there being another place of the same name out of the United Kingdom.

(4.) Names, addresses, and marks on boxes, cases, cards, or other things, in which or attached to which articles of foreign manufacture are imported, shall be deemed to be borne by the articles themselves.

(5.) The Commissioners of Customs in administering this section, whether in the exercise of any discretion or opinion or otherwise, shall act under the control of the commissioners of Her Majesty's treasury.

(6.) In this section the word "name," as applied to a manufacturer, shall include any abbreviation or imitation of a name; and the word "manufacturer" shall include a dealer, and a manufacturing or trading company having a place of business in the United Kingdom.

* * * * * * *

American goods in Jersey.—The consular agent at Jersey says that the commercial intercourse between the United States and that island is on a limited scale, and mostly, if not all, is done through some of the principal ports of England. The consumption of canned meats is very considerable and many articles for agricultural work have been introduced and give entire satisfaction.

American products in Redditch.—Consular Agent Browning reports that the consumption of American provisions, hardware, and other products is increasing in his district. Mr. Browning says:

With regard to provisions it is a noticeable feature that much greater care has been taken in their production and mode of packing; as to hardware, upon examination of many articles, it appears that greater skill and better workmanship has been displayed in their manufacture.

American goods in Birmingham.—Consul King reports as follows concerning the trade in American goods in his district:

I have no means of finding out to what extent American goods are used here, but there must be a steady and considerable increase, as they have become common in many shops and stores; this refers chiefly to provisions of many kinds, but fancy articles and notions are also largely used. I should think that a good business might be done in the numerous varieties of novel chairs, which are to be seen everywhere in the United States. I know several individuals who have brought some of these chairs from the United States, but the expense of personal importation is too great for the general public.

Flour mills in Gloucester.—Commercial Agent Portlock reports that—

During the last year the two largest flour-mills in Gloucester have had to abandon the old fashioned machinery hitherto in use, for which they have substituted new and improved machinery to compete with the American flour now so largely imported into the United Kingdom. The staff of these two mills is naturally very reticent in furnishing any one with any particulars as to what kind and from whence the machinery is from, but I have every reason to believe that it is either American or upon the American principle. I have gleaned that the value of the imported machinery in one mill is somewhere about $1,900,000.

Commission and duties at Guayaquil.—Consul Beach, under date of December 31, 1883, submits the following information concerning commissions, duties, &c., at Guayaquil:

Commission houses, when provided with funds, buy merchandise for 2½ per cent. Where funds are not furnished, they charge 5 per cent. Merchandise is sold for cash for 2 per cent.; on credit for 4 per cent. No discounts are allowed, except when goods are sold on six months' credit, when six per cent. is allowed.

EXPORT DUTIES.

Bark	per 100 pounds..	$1 20
Rubber	do.....	1 40½
Ivory nuts	do.....	12½
Hides	do.....	32½
Cocoa	do.....	37½
Coffee	do.....	45
Sarsaparilla	do.....	38½

Cocoa and coffee crops of Ecuador.—Under date of January 29, 1884, Consul Beach, of Guayaquil, submits the following:

With June last the usual rainy season terminated in Ecuador. The so-called "rainy season"—the season during which there are frequent showers—usually opens with December and closes with June, though there is often the variation of a month in the opening or closing. The last rainy season closed with June, but the present rainy season did not open until the 25th instant, and full six weeks later than usual. For six months and a half there has not been half an inch of rain. As the cocoa fruit sets in December and the coffee fruit in January, the crops have been greatly shortened by the unusually prolonged dry weather. The general estimate is that the crops have been shortened one-half in Ecuador. But as people often overestimate their misfortunes, and the later season may prove highly favorable, I think the shortage of crops may be placed at from one-fourth to one-third, and not prove better than anticipated.

Trade between France and the United States.—Consul Peixotto, of Lyons, supplies the following interesting statistics concerning the trade between France and the United States:

During the year ended September 30, 1883, the exports from Lyons to the United States were $12,102,476, against $13,772,578 in 1881–'82, being a decrease for 1883 of $1,670,102.

The commerce between France and the United States has for several years very

considerably increased. In fact, since 1878, the exports of France to the United States have steadily progressed, as will be seen from the following statement:

French exports to the United States.

1877-'78	$41,000,000
1878-'79	48,250,000
1879-'80	66,585,000
1880-'81	66,585,000
1881-'82	84,920,000

The exports have therefore since 1877 to 1882, or during a period of only five years, more than doubled.

During the same time the imports from the United States into France have been very irregular. When the crops have been bad in France these imports have suddenly and very largely increased; but when the crops have been good, they have very considerably decreased. For example:

Imports from the United States into France.

1877-'78	$51,245,000
1878-'79	85,885,000
1879-'80	96,500,000
1880-'81	90,903,000
1881-'82	52,110,000

American products at Cape Haytien.—The following statement, prepared by Consul Goutier, shows the description and value of the imports from the United States at Cape Haytien during the quarter ending September 30, 1883:

Alewives:		
Barrels		975
Half-barrels		95
Axes	dozen..	35
Beans	barrels..	4
Salt beef:		
Barrels		2
Half-barrels		6
Ginger beer in half bottles	dozen..	292
Blacking	gross..	12
Biscuits	pounds..	2,501
Boards	feet..	35,000
Butter	pounds..	17,200
Tallow candles	do....	1,356
Cart		1
Cheese	pounds..	3,894
Chairs	dozen..	16
Rocking-chairs	do....	1
Codfish	pounds..	307,500
Cotton goods	yards..	179,707
Denims	do....	34,750
Blue drilling	do....	93,845
Drugs and medicines	cases..	46
Duck	yards..	17,985
Engines		2
Flour:		
Barrels		3,549
Half-barrels		755
Quarter-barrels		790
Furniture	sets..	7
Drinking glasses	dozen..	164
Hams	pounds..	4,741
Hats	dozen..	136
Hay	bales..	20
Smoked herrings	boxes..	2,894
Lard	pounds..	50,840
Mackerel:		
Barrels		451
Half-barrels		40
Matches	gross..	75
Nails	kegs..	30
Onions	barrels..	15
Oars	dozen..	10
Oats	barrels..	9

Oakum	bales..	2
Kerosene oil	gallons..	13,500
Linseed oil	do....	20
Pails	dozen..	106
Paint	kegs..	36
Black pepper	pounds..	1,390
Empty pipes		2
Pork:		
Barrels		1,420
Half-barrels		85
Potatoes	barrels..	31
Raisins:		
One-quarter boxes		30
Ropes	coils..	2
Rice	pounds..	55,340
Sewing machines		62
Slates		6,000
Salmon:		
Half-barrels		1
Quarter-barrels		2
Soap	boxes..	21,525
White sugar	pounds..	27,800
Shoes	dozen..	100
Tar	barrels..	2
Tongues:		
Barrels		2
Half-barrels		2
Tobacco	pounds..	4,055
Trunks	nests..	50
Tubs	do....	40
Florida-water	dozen..	145
Wheels		48
Zinc in sheets	pounds..	1,581

The whole amounting to $147,521.90.

Hawaiian exports.—Minister Daggett, of Honolulu, submits the following statement, showing the exports from the Hawaiian Islands for the fourth quarter and for entire year of 1883, as compared with 1882.

The year 1883 shows a decrease of 70,783 pounds of sugar, 27,316 gallons of molasses, 45,646 pounds of tallow, 206,642 pounds of wool, and an increase of 358,597 pounds of rice and paddy, 7,926 pounds of coffee, 16,054 bunches of bananas, and 12,948 hides.

Table of principal domestic exports, Hawaiian Islands.

[Fourth quarter, 1883, as compared with fourth quarter, 1882; also for twelve months 1883, as compared with 12 months 1882.]

Period.	Sugar.	Molasses.	Paddy.	Rice.	Coffee.	Pel.
	Pounds.	*Gallons.*	*Pounds.*	*Pounds.*	*Pounds.*	*Bbls.*
Fourth quarter, Honolulu, 1883	12,861,094	52,767	451,651	2,993,300	200	.....
Fourth quarter, Kahului, 1883	738,086	.....	.....	.....	.....	.....
Fourth quarter, Hilo, 1883	236,593	.....	.....	.....	.....	.....
Total fourth quarter, Hawaiian Islands, 1883	13 835,773	52,767	451,651	2,993,300	200	.....
Total fourth quarter Hawaiian Islands, 1882	12,622,912	60,274	189,543	4,124,924	1,891	.....
Increase	1,212,861	.....	262,108	.....	.....	.....
Decrease	.....	7,507	.....	1,131,624	1,691	.....
Twelve months, Honolulu, 1883	98,827,305	181,217	1,363,705	11,619,000	16,057	.....
Twelve months, Kahului, 1883	13,289,978	.....	.....	.....	.....	.....
Twelve months, Hilo, 1883	1,989,872	12,780	.....	.....	.....	.....
Total twelve months, Hawaiian Islands, 1883	114,107,155	193,977	1,363,705	11,619,000	16,057	.....
Total twelve months, Hawaiian Islands, 1882	114,177,938	221,293	453,633	12,169,475	8,131	12
Increase	.....	.....	909,072	.....	7,926	.....
Decrease	70,783	27,316	.....	550,475	.....	.....

Table of principal domestic exports, Hawaiian Islands—Continued.

Period.	Fungus.	Bananas.	Goat skins.	Hides.	Tallow.
	Pounds.	*Bunches.*	*Pieces.*	*Pieces.*	*Pounds*
Fourth quarter, Honolulu, 1883	2,533	15,502	5,506	3,486	2,972
Fourth quarter, Kahului, 1883	.....	.....	.....	547	.....
Fourth quarter, Hilo, 1883	.....	.....	.....	229	.....
Total fourth quarter, Hawaiian Islands, 1883	2,533	15,502	5,506	4,260	2,972
Total fourth quarter, Hawaiian Islands, 1882	783	8,439	10,189	5,091	24,229
Increase	1,750	7,063	.....	.....	.....
Decrease	.....	.....	4,683	831	21,257
Twelve months, Honolulu, 1883	3,783	44,902	24,798	36,246	23,787
Twelve months, Kahului, 1883	.....	.....	.....	1,728	8,065
Twelve months, Hilo, 1883	.....	.....	.....	981	400
Total twelve months, Hawaiian Islands, 1883	3,783	44,902	24,798	38,955	32,252
Total twelve months, Hawaiian Islands, 1882	2,111	28,848	23,402	26,007	77,898
Increase	1,672	16,054	1,396	12,948	.....
Decrease	.....	.....	.....	.....	45,646

Period.	Wool.	Betel leaves.	Calf skins.	Sheep skins.	Value.
	Pounds.	*Boxes.*	*Pieces.*	*Pieces.*	
Fourth quarter, Honolulu, 1883	202,245	98	.....	2,054	$995,428 56
Fourth quarter, Kahului, 1883	.....	.....	.....	.....	42,539 05
Fourth quarter, Hilo, 1883	.....	.....	.....	.....	14,175 83
Total fourth quarter, Hawaiian Islands, 1883	202,245	98	.....	2,054	1,052,143 46
Total fourth quarter, Hawaiian Islands, 1882	374,062	86	.....	2,305	1,085,591 48
Increase	.....	12	.....	.....	.....
Decrease	171,817	.....	.....	251	33,448 02
Twelve months, Honolulu, 1883	318,271	1,026	190	6,583	7,924,727 11
Twelve months, Kahului, 1883	.....	.....	.....	.....	.....
Twelve months, Hilo, 1883	.....	.....	.....	.....	.....
Total twelve months, Hawaiian Islands, 1883	318,271	1,026	190	6,583	7,924,727 11
Total twelve months, Hawaiian Islands, 1882	528,913	303	70	4,385	8,085,931 34
Increase	.....	723	120	2,198	.....
Decrease	210 642	.....	.....	.....	161,204 23

W. F. ALLEN,
Collector-General of Customs.

COLLECTOR-GENERAL'S OFFICE,
Honolulu, H. I., December 31, 1883.

Emigration from Canada to the United States.—Commercial Agent Carroll, of Port Stanley and St. Thomas, reports that twenty-eight families emigrated to the United States from his district during the fourth quarter 1883, comprising in the aggregate 104 persons, viz, 27 adult males, 27 adult females, 21 boys, and 29 girls.

The occupations of the males were as follows: 11 farmers, 8 railroad men, 1 carriage-maker, 1 grocer, 1 merchant, and 5 laborers. This is an increase compared with the preceding quarter of 31 persons.

The Dartmouth agency.—The consular agent at Dartmouth—an agency under Plymouth—submits the following information concerning his district:

The import and export of coal (chiefly for steamers calling here) increases by "leaps and bounds," and the extension of Messrs. Simpson & Dennison's engineering works, is calculated to be of great benefit to the town, as it will have a tendency to induce steamers to call here.

A loop line of railway to Plymouth is again being talked of, and if carried out will be of immense advantage to the agricultural district of the Southhams, but I fear some time will elapse before the scheme is carried out.

The river traffic to Totness is well carried out. There are three departures every day, an immense improvement from the state of things a few years since, when the river traffic was suspended during the winter season.

The mail steamers to the Cape, Lisbon, Demerara, West Indies, Falkland Islands, &c., continue to call here.

At Brixham the fishery business has been fairly successful. The sailing shipping (foreign) is gradually disappearing, but efforts are now being made to build steamers.

Torquay continues to be a favorite resort for invalids in the winter, and is, I believe, thriving.

Jersey cattle for the United States.—Consular Agent Renouf supplies the following interesting information concerning Jersey cattle and their exportation to the United States during the year ended September 30, 1883:

There is a marked increase in the exportation of cattle for breeding purposes to the States, the total number exported during the year just ended is 874, of the value of £40,380, averaging nearly £47 10s. per head; in the number is included a prize cow of the invoice value of £1,000, thus raising the average to a high figure.

The breeders of this island are now fully aware of the necessity for a pure breed with good milking qualities of their cattle for the United States, and they are most anxious that every precaution should be taken to insure the genuineness of the breed of their cattle when landed at the United States, and this shows the necessity of each animal being branded on the horn and accompanied by a certificate duly attested, such certificate describing the animal and the number branded on the horn, together with the certificate of the veterinary surgeon of the soundness of the animal and its being free from foot-and-mouth disease, the collector of customs at the port of destination in the United States to be duly advised of each shipment from this consulate, giving the number of heads of cattle and also the numbers branded on the horns, corresponding with the attested certificates.

With these precautionary measures the importers in the United States would be quite sure that no fraud is practiced, as there is in England a breed called Jerseys, which cannot be pure as it is well known that Jersey cattle imported into England degenerated in two or three years, and do not retain their milking properties.

It would be important to the purchasers of valuable cattle for the United States to have them imported direct from the Channel Islands, thereby insuring their arriving in that sound state in which they leave the island.

Reeling silk in Persia for the United States.—Consul-General Benjamin, of Teheran, reports as follows concerning the reeling of Persian silk for American manufacturers:

I have the honor to report that, on receiving the specimens of silk forwarded to me by Mr. John Ryle, of Paterson, through the Department, I at once gave attention to the question submitted, of having Persian silk reeled in lengths suited to American looms, and I now have the pleasure of reporting the complete success of my efforts in this direction. Examples of the Persian silk reeled in this way have been forwarded to Mr. Ryle, differing in no respect as regards length and quality from the samples sent to me, except on the score of whiteness. But this is simply because the former has not been washed. Cleansing will give it the same purity and fineness found in the best silk produced in China. The Persian silk dealers are prepared to furnish it to the United States as soon as they receive orders.

At present Russia absorbs by far the largest share of Persian silk, and, very naturally, will endeavor to retain control of the trade.

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UNITED STATES CONSULAR REPORTS.

REPORTS

FROM THE

CONSULS OF THE UNITED STATES

ON THE

COMMERCE, MANUFACTURES, ETC.,

OF THEIR

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AMERICAN TRADE WITH BRAZIL, AND HOW TO INCREASE THE SAME.

REPORT BY CONSUL-GENERAL ANDREWS, OF RIO DE JANEIRO.

AMERICAN STEAM COMMUNICATION.

The most interesting event in the commerce of the United States with Brazil during the year 1883 was the establishment of a line of three new American steamships to run between New York and this and intermediate ports. The first of these was the Finance, which arrived at Rio de Janeiro February 27. She was followed by the Advance, which arrived April 11, and by the Reliance, which arrived June 9. These were all new steamers of about 2,000 tons, and possess good accommodations for passengers. They have continued to make regular trips without interruption, and appear to have done a remunerative business, though their return trade naturally encounters great competition from the numerous foreign steamships which, coming laden from Europe to Brazilian and the River Plate ports, return via New York, the transient ones especially often taking coffee from here to that port, at 20 cents a bag. Still, the line has been a success, and there is a prospect that it will be increased by new steamers, which will monthly extend their trips to Uruguay and the Argentine Republic. This gratifying increase of American navigation, aided to some extent by the Brazilian Government, has had, and will continue to have, a very beneficial effect on American trade with this country.

Official statistics of the foreign commerce of Brazil have not been prepared later than for the fiscal year ending June 30, 1881. It amounts, however, in round numbers to $173,000,000 a year, of which $56,000,000, or about one-third of the whole, is with the United States. Of this amount $47,000,000 are exports, principally coffee and rubber, to the United States, while $9,000,000 represent our imports into Brazil, consisting principally of flour, kerosene, machinery, lard, and lumber. This trade is distributed among the leading ports of Brazil about as

follows: Pará, $10,000,000; Pernambuco, $6,000,000; Bahia, $3,000,000; Rio, $30,000,000; Santos, $5,000,000; Rio Grande do Sul, $1,000,000; and other ports $1,000,000.

Under ordinary circumstances our export trade with Brazil will increase gradually, especially with the continuance of the new line of steamships. If the price of coffee should continue to rise or remain at what it is now, it having risen from 8 cents per pound for prime good first in January, 1883, to 12½ cents per pound at the present time, the purchasing power of this country will admit of $1,000,000 annual increase of imports from the United States. The fact, however, that our exports to Brazil are much less than our imports therefrom is not proof of an unfavorable situation of trade, although, according to the popular error on "the balance of trade," such might be supposed. In the article of lard, Brazil, as she ought to do, is learning to supply herself; but for her leading American imports she will continue to be as much dependent on our country as we are upon her for coffee. Though a field worthy of our particular attention and enterprise, she has not the capacity for that rapid commercial development which her resources would at first seem to indicate. Her situation is not favorable for the rapid accumulation of wealth. With a population of some 10,000,000 to 12,000,000 scattered over a region two-thirds as large as the United States, her territorial extent is a source of weakness. Her resources, though undoubtedly imposing and calculated to insure for her an important future, are yet inferior to what is commonly supposed. Her coal, iron, and much of her lumber have to be imported. The small grains (not including of course maize) do not flourish on her soil. At present she is laboring under some financial embarrassment, partly originating, it is but just to say, in a long war that was forced upon her and in which her course was disinterested. Her revenue amounts to about $55,000,000 a year, but the expenditures, of which only a comparatively small part is for productive purposes, annually exceed that amount by several million dollars. Her annual interest charge is now upward of $20,000,000. Her currency consists of irredeemable legal tender Government notes, the value of which daily fluctuating is about 10 cents below par. In the laudable purpose of development, the Government has incurred heavy liabilities. It has guaranteed, and for a long term of years will need to pay, the interest on the bonds of several railway and other companies whose expenses exceed their income. There is quite a general feeling that unless a change be made in the direction of retrenchment, grave financial difficulties may be experienced. The situation is not favorable, therefore, for much material progress. Indeed, the gradual extinction of slave labor will, for a while at least, tend to reduce the volume of national products. The number of immigrants coming to Brazil is only about 30,000 a year notwithstanding great ocean steamers have, as it were, bridged the sea for their passage. Perhaps there is nothing that would more rapidly increase the population and wealth of the country than for the Government to open the vast areas of undeveloped land, in a suitable manner, to occupation by European immigrants; but there is not much likelihood of this being done.

RECIPROCITY.

It may be worth while to consider what, if any, reciprocal arrangement could be effected between the United States and Brazil for the increase of trade. For many years the United States have been receiving the leading product of Brazil free of duty, while all European

countries impose a tax on it, and some of them a very high one; France, for example, taxing it as high as 14 cents per pound. We buy $30,000,000 worth of coffee from Brazil annually without duty. Brazil, at the same time, increases the dearness of it to us by export taxes levied and collected, both by the empire and by separate provinces. This export tax is 11 per cent. from the provinces of Rio de Janeiro and San Paulo, and 14 per cent. from the provinces of Bahia and Ceará. Besides, she gets some million dollars more of revenue from it by excessive charges for its transportation on the principal Government railway. The United States also import from Brazil rubber to the value annually of $8,000,000, all free of duty. Brazil imposes a very heavy tax on this, amounting, state and provincial, to 22 per cent. from the province of Pará and 21 per cent. from the province of Amazon. At the same time she imposes a heavy tax on most of the imports from the United States. She does not, of course, technically discriminate against the United States, but her duties have practically that effect. While the exports of the United States to Brazil amount to $9,000,000 a year, those of Great Britain, France, and Germany amount to about $60,000,000 a year. Among the indirect effects of our exports being so much less than our imports is that the exchange for payment of our imports from Brazil is done in London; whereas, if our trade with Brazil were more equal the profits of this exchange would tend to flow to New York.

Now, it is perfectly competent for the United States to lay an import duty on coffee, and if they were to do so nothing is more certain in political science than that about half such tax would have to be borne by the Brazilian producer just as now the American consumer has to pay half the export tax laid by Brazil. What would be the result? Would Brazil, with a view to be rid of the burden, tender the United States some modification of her tariff as affecting American goods? This would depend much upon the amount of duty which the United States might determine to put upon coffee.

There are, however, social aspects to this question which may be decisive. It is a great benefit to a country like ours to have coffee cheap. Besides being a valuable part of the subsistence of all classes it tends, I think, to lessen the use of spirits. I have been struck by its apparent effect in that direction here. In this city there are many tidy coffee restaurants, several large and fashionable ones, where only coffee is served, and which are much frequented about noon by gentlemen, and where pure and good coffee in cups a little smaller than an ordinary-sized tea-cup can be had at 2 or 3 cents a cup. It has seemed to me that the means of procuring some refreshments of this sort is calculated to prevent the habit of using strong drink. I have the impression that coffee is very little adulterated now in the United States. With the price as cheap as it is now and for a long time has been in the United States, and transported as it frequently is the distance of 5,000 miles from here to New York at as low freight as 20 cents a bag of 132 pounds, it surely ought to be had by the poor as well as rich, in a pure and genuine condition. And if I am right in my supposition that it is not adulterated, and is generally retailed in a pure state, then there would be strong objections to anything more than a moderate duty, if any, being laid upon it. But, if I am mistaken in this, and it is unhappily the case that very much coffee in our country is retailed in an adulterated condition, then I would say put on a heavy import duty. We would then be in a position to negotiate for such mutual reduction of duties as would promote our export trade with Brazil.

AMERICAN CARRYING TRADE.

The deep interest felt in the revival of American shipping will jus
the continuance of full statistics of the number and tonnage of An
can vessels trading at this port as carefully taken from the record
this office. The following table shows, by quarters, the number
registered tonnage of American steam and sailing vessels arrivin
and departing from Rio de Janeiro during the four last calendar y
By comparing the returns of the two past years it will be seen, as ha
fore been mentioned, that an important increase took place in Amer
steam navigation at this port; that during the year 1883 the numb
American steamers arriving at this port was 14 of 26,793 tons, bein
increase over the preceding year of ten steamers and 19,809 tons;
the number of American sailing vessels arriving was 82 of 47,561 t
being the same number of sailing vessels as in the preceding year,
a decrease of 321 tons.

The number of American steamers clearing was 13 of 24,873 t
being an increase over the preceding year of 9 steamers and 17,889 t
The number of American sailing vessels clearing was 87, of 65,243 t
being an increase over the preceding year of two vessels and 18
tons.

*Statement of the navigation of the United States at the port of Rio de Janeiro for th
endar years* 1880, 1881, 1882, *and* 1883, *as shown by the records of the United State
sulate-general.*

AMERICAN VESSELS ENTERED AT THE PORT OF RIO DE JANEIRO.

Years.	Steamers.		Sailing vessels.		Total
	No.	Tons.	No.	Tons.	
First quarter, 1880	2	7,180.55	32	19,182.87	26,
Second quarter, 1880	5	16,096.53	23	11,116.62	27,
Third quarter, 1880	3	10,628.85	26	16,229.53	26,
Fourth quarter, 1880	3	10,612.80	36	20,445.55	31,
Total	13	44,518.73	117	67,044.57	111,
First quarter, 1881	3	9,097.26	26	12,439.83	21,
Second quarter, 1881	5	13,429.65	34	24,315.94	37,
Third quarter, 1881	1	2,131.49	29	19,853.01	21,
Fourth quarter, 1881	1	2,134.86	27	18,363.51	20,
Total	10	26,793.26	116	74,972.29	101,
First quarter, 1882	1	2,014.42	16	6,910.09	8,
Second quarter, 1882	1	2,727.80	21	12,903.86	15,
Third quarter, 1882	2	2,241.68	22	15,416.90	17,
Fourth quarter, 1882	.....	.....	23	12,651.96	12,
Total	4	6,983.90	82	47,882.83	54,
First quarter, 1883	1	1,919.78	19	9,356.81	11,
Second quarter, 1883	4	7,681.17	17	8,430.01	16,
Third quarter, 1883	5	9,547.35	23	17,381.70	28,
Fourth quarter, 1883	4	7,644.89	23	12,392.39	20,
Total	14	26,793.19	82	47,561.11	74,

AMERICAN VESSELS CLEARED FROM THE PORT OF RIO DE JANEIRO.

Years.	Steamers.		Sailing vessels.		Total tons.
	No.	Tons.	No.	Tons.	
First quarter, 1880	3	10,728.85	35	19,688.95	30,417.80
Second quarter, 1880	4	13,334.69	23	22,679.49	36,014.18
Third quarter, 1880	3	9,842.39	23	18,223.11	28,065.50
Fourth quarter, 1880	4	14,161.10	41	17,248.70	31,409.80
Total	14	48,067.03	122	77,840.25	125,907.28
First quarter, 1881	4	12,629.51	30	13,335.58	25,965.09
Second quarter, 1881	5	13,429.65	26	16,930.49	30,360.14
Third quarter, 1881	1	2,131.49	32	22,897.64	25,529.13
Fourth quarter, 1881	1	2,134.86	26	19,084.75	21,219.61
Total	11	30,325.51	114	72,248.46	102,573.97
First quarter, 1882	1	2,014.42	22	11,108.66	13,123.08
Second quarter, 1882	1	2,727.80	20	10,481.39	13,209.19
Third quarter, 1882	2	2,241.68	20	11,952.08	14,200.76
Fourth quarter, 1882	.....	.....	23	12,911.86	12,911.86
Total	4	6,983.90	85	46,460.99	53,444.89
First quarter, 1883	1	1,919.78	21	15,209.30	17,129.08
Second quarter, 1883	4	7,681.17	21	10,371.83	18,053.00
Third quarter, 1883	5	9,547.35	19	22,915.61	32,462.96
Fourth quarter, 1883	3	5,725.11	26	16,746.23	22,471.34
Total	13	24,873.41	87	65,242.97	90,116.38

IMPORTS OF AMERICAN GOODS AT RIO DE JANEIRO.

Flour was imported into this port in 1883, to the extent of 450,883 barrels, against 403,630 barrels in 1882 and 404,175 barrels in 1881. Of the import in 1883 there were 378,590 barrels from the United States, principally Richmond, Va., 29,571 barrels from the River Plate, 22,130 barrels from Trieste, and 15,060 barrels from Chili. A considerable part of the trade was in new hands, and was inclined to be speculative and irregular. The consumption of flour increases but slightly, though nearly all of it is made into baker's bread of a good quality, which is consumed by all classes in this city. Brazil imports about 900,000 barrels of flour annually, of which the greater part is from the United States. There has long been a regular flour trade with this port from Baltimore and Richmond. The highest prices per barrel at Rio de Janeiro during the past year were as follows:

Richmond	$9 90
Baltimore	9 67
Trieste	9 90
Western brands	9 67
River Plate	8 38
Chili	7 75
Canada	9 52

The prices were a little higher in 1882 and in the month of June of that year Richmond brought $10.75 a barrel. Spring wheat patent flour of the United States has been tried here, and has been acknowledged by the bakers to be at least as good as the Richmond, but they are disinclined to pay the higher price which is demanded for it. It would seem that the patent flour from Trieste commands no higher

price than the Richmond. The existence of a regular line of steamers from Trieste to Brazil has afforded an opportunity for crowding, so to speak, the flour from that port on this market. This accounts perhaps for the port of Bahia taking the most of its flour from Trieste. Were it not for the exorbitant freight charges on the Brazilian railways a considerable market for flour would be found in the interior and the importation and comsumption of it thereby increased.

The import of flour to seven ports of Brazil and which must have comprised about all that was imported into the country, was, in the year 1882, as follows:

	Barrels.
Rio de Janeiro	439,7
Pará (estimated)	40,0
Pernambuco	166,9
Bahia	91,9
Maranham	11,3
Santos	39,5
Rio Grande	96,0
Total	885,6

Of which there were imported from the United States 658,849 barrels, from Trieste 130,366 barrels.

Kerosene.—The import of this article from the United States to this port the past year was 179,067 cases, against 255,487 cases in 1882 and 254,055 cases in 1881, the decline being in consequence of the ports of Santos and Rio Grande do Sul, south of here, having received the supply direct from the United States instead, as in previous years, from this port. During the year the price varied from $2.40 to $3 per case, and for eight months out of the twelve was not remunerative owing to speculation and excessive importation.

Railway materials imported from the United States to Brazil consist principally of locomotives, the supply of which is mostly taken from our country, while most of the rails used in Brazil are imported from Great Britain. Locomotives and rails are free of duty. There are no late statistics on this line of goods, but the trade in increasing.

Hardware.—Neither are there late statistics on the importation of hardware. The bulk of this class of goods, however, is of European manufacture, there being a tendency here to buy low-priced hardware which in the end is the dearest. Axes and flat-irons are among the leading articles of American hardware which are imported here. One will see in use here European claw hammers, which can only last a year or two, while the old-fashioned American hammer will with fair usage last a mechanic or a farmer a lifetime. The duty on flat-irons is one and a half cents per pound, on axes, spades, &c., fifteen cents per one hundred pounds.

Lard.—The import of this article from the United States to Rio de Janeiro in 1883 was 52,586 kegs, 94 cases, and 25 pails, being a little more than was imported in 1882, but less than half the import in each of the years 1880 and 1879. The price in 1883 varied from 18 cents to 22 cents per kilogram, or say from 8 cents to 10 cents per pound. The customs duty is 4 cents per pound; and with this protection and the abundant facilities for production the home supply is every year increasing.

Lumber.—The import of lumber, principally pitch-pine, from the United States to this port in 1883 was 13,150,560 feet as compared with about the same quantity the previous year. The price the past year has varied from $51.60 to $53.75 per thousand feet.

HOW TO ENLARGE AMERICAN TRADE IN BRAZIL.

Manufacturers and merchants purposing to make a business of exporting to Brazil, would do well to first look the ground over. They will find in the leading ports business houses of different nationalities, which conduct their correspondence in English and other languages, and which are willing to import provided the goods are cheap and of desirable quality. Portuguese is the language of the Brazilians, and, though different from the Spanish, can be understood by one familiar with the latter. Many of the habits and tastes of the people are similar to those in the mother country.

Provisions.—In the line of provisions the United States might take the lead in the export of several articles which are now mostly brought from Europe. Nearly all the butter consumed in this city is imported, and considerable of it from Denmark and France. It is retailed in tin cans, containing two pounds each, at 60 cents a pound; is of yellow color, and scarcely good enough for the table. Much of the cheese which is called English is probably an American product, imported through England; it retails at 45 cents per pound. A small green skim-milk cheese of Brazilian manufacture, weighing about two pounds, is retailed at 60 cents. Oatmeal is used but little, and cracked wheat not at all, though some would find a sale if it were imported, especially that which is put up in small packages already cooked and dry.

Furniture.—There would seem to be an opening here for much more American house-furniture than is now imported. In the Brazilian parlor and public office the sofa and chairs are cane-seated, with fine mahogany or Brazil wood frames, the sofa having a high back. They are neat, substantial, and lasting; and a parlor-set consisting of a sofa, two cabinet tables (called "deenkerquers"), with glass doors and marble tops, and chairs, of which two are with arms and high back, retails at $500. Upholstered furniture is also used by some of the wealthier families. A highly modern and neat chair of Austrian make, used here in respectable though not pretentious dining-rooms, is very strong, and is retailed at $2.25 each. It has the natural wood color, which is russet. The seat is circular and is made of two thin layers of wood, which is perforated and fastened with nails to a strong ring of wood an inch in thickness, 4 inches beneath which is another wooden ring fastened inside of the legs to give them support. The framework of the back and the back legs are all of a single rod or piece of wood, round, and an inch or so in diameter, and bent somewhat like an ox-bow, being 15 inches apart at the widest part of the back and fastened to the ring piece which supports the seat with screws and nuts. The rest of the back consists of a smaller bent piece set under and fastened to the other, and the center of the back, from the top to the seat, being filled with a thin piece of wood with two rows of holes in it, marking the figure of a Greek cross.

Wardrobes are in common use, and are made so as to be taken to pieces. Bookcases the same; those made of the Brazilian cinnamon wood, which is a little darker than bird's-eye maple, being particularly fine. Iron bedsteads with wire mattresses are common in well-to-do families, and are being made here. Metal hat-racks, which can be taken to pieces and packed in small compass, are in use. In Brazilian kitchens the stove of home manufacture is a fixture belonging to the house. Stoves for warming rooms are scarcely ever used in this city, as the

houses are not made with chimneys, except for the kitchen, nor v fire-places. Still, there are some sixty days in the course of the year w a little fire in a fire-place mornings and evenings would be equally c fortable and healthy. During the cooler months many people su with rheumatism in consequence of low and damp temperature in t dwellings. There is a little mortar-shaped cast-iron charcoal st open at the top, and not unsafe in an open kitchen, which is econon and much used for boiling water, making coffee, and doing a s amount of cooking. It is about a foot high and a foot in diamet the top, and can be placed by hand on the larger stove when it is t used. Its grate is set deep enough to admit of holding a few piec charcoal and a kettle. In front, below the grate, is an opening, an fanning before that with a husk or palm fan, as the practice is, a g ing heat is soon produced.

Earthenware.—There is in common use in Brazil, as well as in S ish-America and in Portugal and Spain, an earthen bottle (calle Brazil "moringue") for holding drinking water, which would most useful addition to American household utensils in warm wea as it keeps water fresh and cool a long time. It is likewise a picturesque object, being in the form of an ancient Greek pat of which a specimen, all but the stopper, is given in plate 28, 234, of Eastlake's "Household Taste," under the head "Greek t ware." The lower part of this bottle is bulbous in form, abo inches in diameter, the neck 4 or 5 inches long, so as to be veniently grasped by the hand, and 1½ inches in diameter at mouth. The stopper is hollow, with a neat circular cap top. The tom is flat, and it is usually set on a small plate of the same mat The whole is of a deep Indian-red color. The quality of being ungl gives it the power to keep water cool. Being used also with a sto as it always should be, it prevents the water from absorbing the im ties of the atmosphere; also excludes insects; and for these rea and because it keeps the water cool, it would be a vast improvemer our open pitchers. It would also tend to do away with the use of water. These bottles are retailed singly with the plate at less tha cents. Glazed and painted earthen bottles are often to be seen on tables of restaurants and hotels, but they do not keep the water nor are they as picturesque objects as the unglazed bottles.

Pianos and organs.—Many pianos are sold in this city, all of w are imported; but on the ground, as is pretended, of cheapness preference seems to be given to those of Paris manufacture. T upright pianos retail at $275, $380, and $500 each, and this paying the import duty of $83.50 on each piano, without rega value. A dealer in pianos here informs me that he has 100 pi rented out at 25 milreis, say $10.75, each a month, and that this br of the business is more profitable than the sale of pianos. The b ing of new churches is not now frequent, and as Sunday-school not common, the demand for organs is quite limited.

Office furniture.—American office desks and tables are popular the demand for them ought to increase. There is no house here, ever, that has an assortment of them. In exporting such good much care cannot be exercised in packing. Several instances come to my knowledge of American furniture being injured in t portation from having been improperly packed. It is proper to here, too, that much of our upholstered furniture is made more for than for comfort, and that our manufacturers ought to be more ticular if they would keep abreast of their European competitors

Daniel Webster's memoirs is an anecdote of a little set-to between him and George Blake, in a lawsuit involving the value of a lot of shoes. Mr. Webster had enlarged on the durability of the shoes. "I grant," said Mr. Blake to the jury, "that the shoes never wore out, but the unfortunate men who wore them did." So, with some of our hard stuffed, oval-seated, upholstered chairs and sofas, it would require an uncommonly robust person to get any rest out of them.

School furniture.—There is a large and promising field in Brazil for American school furniture. Not only will school-houses increase in number and require to be equipped, but those which exist are, as a rule, very deficient in furniture. There is no business house here that makes a specialty of such goods. At an educational exhibition which was held in this city the past year, Belgium took the lead in the exhibit of technical work of pupils and in school-room apparatus. Her display was admirable and calculated to inspire admiration for the country making it, and thus indirectly to benefit her commercial interests. The Government of the United States appears to have had no part in the exhibition. There was, however, a scanty display of school furniture on the part of some American business firm.

Woolen goods.—The habit of using woolen goods is more common here than would be supposed. There is a large trade in ready-made woolen clothing. One-third of all the days in the year a business man will wear or take upon his arm a light woolen overcoat when he leaves his house in the morning. The fashions are the same as at Paris or New York. Woolen bed blankets used here are like those in our country, but I think a pattern lighter and smaller, say for single beds, would be popular, as there are many nights when a sheet is insufficient cover and a thick blanket is too much. There is considerable trade in light merino undershirts, and it would seem as if a pattern a little thinner and lighter than what is in common use would be popular.

Cottons.—For many years there has been some import from the United States of blue cotton drilling for men's cheap clothing, but less is imported now than ten years ago, as such cloth is now woven to some extent in Brazil of colored yarn imported from different countries. Brazil's protective duty of 8 cents per pound on plain cotton cloth has stimulated her manufactures, which are increasing.

Shoes.—In the matter of shoes the American manufacture for ladies' wear is nowhere surpassed. Such shoes can compete in price with stocks here, and ought to be introduced.

American and European labor.—The talisman of trade is cheapness. If we would export largely we must manufacture as cheaply as they do in Europe. The United States have long and justly been known as the country in which the workingman can get along in the world, both in respect to wages and social respectability. American manufacturers will do well to bear in mind, however, that great improvement has taken place in the condition of the workingman in Europe in the past thirty or forty years. There has been vast improvement in popular education. Cities which are manufacturing centers have been enlarged and beautified. Splendid parks exist for holiday recreation. Zoological gardens and fine museums of art and natural history have been freely opened. Workingmen's associations with lecture halls and libraries have been formed, and many other attractions and means of diversion and improvement have been provided, all tending to the satisfaction of the mechanic and to make him content with moderate wages. Cheapness of living, though important, is not the sole thing to make labor cheap. Most mechanics will work cheaper in a beautiful and well-governed city than

in a place which is the reverse. The attractiveness of the locality, t security of life and property, and all the benefits of pure and economi municipal government will go a great way in making the mechanic c tented and prosperous. Labor, in an important degree, will be cheap proportion as these benefits are enjoyed.

BRAZILIAN TARIFF ON IMPORTS.

As a sample of the Brazilian tariff on imports, I give below the ra on certain goods which are or can be conveniently imported from t United States. It will be seen that the rates are very high on so articles, such, for example, as 11 cents per pound on butter, and cents per pound on bacon.

DUTIES ON ARTICLES OF SUBSISTENCE.

Wheat flour	per barrel..	$
Maize	per hundred pounds..	
Pork	per pound..	
Lard	do..	
Hams	do..	
Bacon	do..	
Butter	do..	
Cheese	do..	
Fresh fruits	do..	
Preserved fruits	do..	
Whisky	per gallon..	1

DUTIES ON COTTON MANUFACTURES.

Unbleached cotton cloth	per pound..	
Shirting	do..	
Calicoes	do..	

DUTIES ON HARDWARE.

Fence wire	per pound..	
Axes, hatchets, spades, hoes, picks, and masons' tools	per hundred pounds..	
Carpenters' and joiners' tools	do..	

DUTIES ON MISCELLANEOUS GOODS.

Kerosene:		
Per case, 64 pounds net		1
Or per pound		
Lumber, per cubic meter (1.3 cubic yards)		3
Men's boots and shoes	per pair..	1
Ladies' gaiters, fine	do..	2
Platform scales:		
Capacity of 220 pounds	each..	5
Capacity of 11,000 pounds and upwards	do..	6
Watches and clocks	do..	
Pianos, in common use	do..	8
Center tables of wood:		
Ordinary	do..	
Fine	do..	1
Writing tables of wood:		
Fine	do..	
Office tables or secretaries, with drawers, fine	do..	3
Sofas	each..	$5 00 to 1
Chairs, of wood:		
Ordinary	each..	
With arms, fine	do..	

C. C. ANDREWS,
Consul-Genera

UNITED STATES CONSULATE-GENERAL,
Rio de Janeiro, March 14, 1884.

COMMERCE AND INDUSTRIES OF BRAZIL.

REPORT BY CONSUL-GENERAL ANDREWS, OF RIO DE JANEIRO.

FOREIGN COMMERCE OF RIO DE JANEIRO.

The following statement will show the kinds and values of exports from Rio de Janeiro during the fiscal year ending June 30, 1882, as compiled from the statistics published by the custom-house at this port. The total exports amounted to $37,988,913, being $12,000,000 less than in preceding fiscal year. This great difference is explained by the decline which took place in the price of coffee. The export duties amounted to $3,315,982, or about 10 per cent. A year ago the custom-house of this city commenced the issue of a semi-monthly statistical publication, entitled "Boletim da Alfándega do Rio de Janeiro," which will be of great benefit in furnishing fresh statistical information in regard to commerce. From the publication I have been able to compile a table, accompanying this report, which shows the value of exports and imports at this port the first half of the present fiscal year. The value of the exports for such period was $19,798,112.

Statement showing the exports from Rio Janeiro for the year ending June 30, 1882.

Description.	Value.	Amount of export duties.	Countries whither exported.
Coffee, sugar, tobacco	$561, 349	$26, 983	Argentine Republic.
Coffee	72, 411	6, 417	Austria.
Coffee, rum, hides, medicinal herbs	1, 335, 921	120, 213	Belgium.
Coffee	71, 435	6, 429	British Channel.
Coffee	582, 324	52, 408	Cape of Good Hope.
Coffee, tobacco, and maté	35, 379	3, 183	Chili.
Coffee	178, 751	16, 080	Denmark.
Coffee, hides, diamonds, farina	3, 885, 090	339, 151	France.
Coffee, gold	4, 433, 283	898, 533	Germany.
Coffee, sugar, gold, diamonds, hides, and rosewood	3, 059, 418	224, 821	Great Britain.
Coffee	216, 252	19, 462	Gibraltar.
Coffee and rosewood	44, 187	3, 948	Italy.
Coffee and rosewood	184, 806	16, 632	Mediterranean.
			Netherlands.
Coffee	30, 883	2, 779	Port Natal.
Coffee, rum, and rosewood	1, 006, 693	89, 731	Portugal.
Coffee	3, 293	292	Spain.
Coffee	53, 241	4, 748	Sweden and Norway.
Coffee, sugar, hides, rosewood, and medicinal herbs	21, 576, 719	1, 935, 745	United States.
Coffee, sugar, rum, and tobacco	655, 430	48, 423	Uruguay.
Miscellaneous	1, 949		Other countries.
	37, 988, 913	3, 315, 982	

The value of the imports into Rio de Janeiro during the fiscal year ending June 30, 1882, was $40,026,804, as shown by the table below, being a million and a half dollars less than in the preceding year. The duties collected on these imports amounted to $13,795,939, being at an average rate of 34 per cent. As compared with the preceding fiscal year there was a little increase in the imports from Germany and Great Britain, and a little falling off in those from France and the United States:

Statement showing the imports at Rio de Janeiro for the year ending June 30, 1882.

Description.	Value.	Countries.
Jerked beef, live animals, fruits, wool, and flour	$1, 514, 754	Argentine Republic.
Flour, iron, steel, furniture	63, 237	Austria.
Cotton, woolen, linen, and silk manufactures, iron, steel, crockery, &c	1, 879, 313	Belgium.
Flour and fruits	237, 361	Chili.
Tea	3, 293	China.
Cotton, woolen, linen, and silk manufactures, wines, oils, leather, iron, steel, jewelry, earthen and glass manufactures, and stationery	7, 179, 993	France.
Cotton, woolen, linen, and silk manufactures, liquids, chemical products	3, 582, 972⅛	Germany.
Cotton, woolen, linen manufactures, iron and steel manufactures, hardware, machinery, coal, provisions, &c	16, 174, 826	Great Britain.
Macaroni, wines, oils, paper, &c	324, 262	Italy.
Preserved meat and fish	56, 600	Netherlands.
Wines, salt, leather, fruits, and vegetables	2, 815, 639	Portugal.
Lumber	20, 869	Russia.
Wine, oil, and fruit	173, 5⅛6	Spain.
Lumber, iron, and steel	104, 456	Sweden and Norway
Flour, kerosene, lard, lumber, paper, machinery, hardware, watches, &c	3, 476, 632	United States.
Jerked beef, fruits, flour, bran, hay, live animals	2, 407, 881	Uruguay.
Miscellaneous	11, 140	Other countries.
Total	40, 026, 804	
Total duties averaging 34 per cent.	13, 795, 939	
(The duties are not stated in respect to each country.)		

The rate of exchange on London during the past calendar year ha varied from 21 to 22¼ pence to the milreis at ninety days. The mediu rate was 21 7/16 pence, equivalent to 42⅞ cents. In reducing Brazilian t American money, in the valuations in this report, I have taken the mi reis as equivalent to 43 cents. The value of the milreis in gold is $0.54 but there is no gold in circulation and exceedingly little silver.

The value of the exports from Rio de Janeiro to the United Stat during the fiscal year ending June 30, 1883, as shown by the records this office, was $25,738,322. It includes the custom-house and shippin charges, and consequently is greater than the valuation as given by th custom-house statistics. The number of bags of coffee exported to th United States was 2,315,982, of 132 pounds each, being an increase 302,631 bags over the previous fiscal year. The average annual increa during the last three fiscal years has been 235,994 bags, or 31,151,2 pounds.

Statement of the exports from Rio de Janeiro to the United States for the year ending Ju 30, 1883, as taken from the records of the consulate-general.

Articles.	Quantities.	Value.
Coffee	2,619,613 bags	$25, 576, 488
Rosewood	2,618 logs, 1,886 pieces, and 616 half logs	105, 413
Wet salted hides		31, 197
Ipecacuanha	71 bales	6, 132
Old iron	561 tons 13 cwt. 2 quarters	5, 828
Sugar	828 bags	4, 376
Barb fence wire	273 reels (re-exportation)	4, 242
Household effects		1, 001
Fish glue	34 bags	922
Jewelry	1 box (re-exportation)	493
Sugar, crystallized	7 packages	349
Medicinal plants, seeds, &c	29 bales and 3 cases	273
Advertising material	3 cases (re-exportation)	256
Hornpiths and jaws	25 tons	239
Medicines	13 cases (re-exportation)	220
Wood	6 cases	97
Sundries	74 cases and 4 bales	789
		25, 738, 322
Value of exports the previous fiscal year		26, 920, 915

Statement No. 1, herewith,* shows the kinds and official values of imports at Rio de Janeiro during each of the fiscal years 1881–'82 and 1882–'83. The value of the imports the last mentioned year was $42,220,711, being $2,000,000 more than in the preceding year.

Statement No. 2, herewith,* gives a comparative table of the exports and imports at Rio de Janeiro during the two fiscal years 1880–'82, with the countries to and from which they took place.

Statement No. 3* shows the value of the imports and exports at Rio de Janeiro, with specification of countries, during the first half of the fiscal year ending June 30, 1884.

Statement No. 4* shows the values of imports and exports at Rio de Janeiro during each of the last ten fiscal years.

FOREIGN NAVIGATION OF RIO DE JANEIRO.

Statements Nos. 5 and 6, herewith, show the ocean or foreign navigation of the port of Rio de Janeiro for the fiscal year ending June 30, 1882, as taken from the latest published official report of the custom-house at said port. From statement No. 5 it will be seen that the number of vessels of whatever nationality which arrived from the United States at Rio de Janeiro was 169, of 96,578 tons, being a decrease from the previous fiscal year of 2 vessels and 12,186 tons. The number of vessels of whatever nationality clearing from Rio de Janeiro to the United States was 305, of 219,117 tons, being an increase over the preceding year of 51 vessels and 40,717 tons. Statement No. 6 shows the nationality of the vessels arriving at and departing from Rio de Janeiro during the year ending June 30, 1882. The number of American vessels arriving was 97, of 66,938 tons, being a decrease of 36 vessels and 43,264 tons as compared with the preceding fiscal year. The same statement shows that the total number of sailing vessels arriving at this port was 789 of 363,512 tons, or 1,289 tons less than in the previous fiscal year. The number of steamers arriving was 537, of 819,639 tons, being an increase over the previous fiscal year of 56 steamers and 51,683 tons. Of these steamers, 227 (of 360,078 tons) were British, 111 (of 205,905 tons) were French, 69 (of 113,165 tons) were German, 31 (of 42,209 tons) were Belgian, 31 (of 37,240 tons) were Italian, and 4 (of 9,008 tons) were American.

FOREIGN STEAMSHIP NAVIGATION OF RIO DE JANEIRO.

There are, besides the new American line, of which Messrs. Wilson Sons & Co. are agents here, ten other different lines of foreign steamers regularly trading to this port.

The private company, limited, managed by Messrs. Lamport & Holt, Liverpool, has a line of steamers leaving Rio de Janeiro every Saturday for New York, and which continue thence to Liverpool, none returning from New York to Rio. Nearly all carry passengers, but one each month is specially fitted for passengers. Fares to New York, $125 to $150, and $62. Average passage, twenty-one days. A steamer of this line leaves Liverpool every Saturday for the River Plate direct; and every Wednesday one from Liverpool to Rio de Janeiro, calling at Lisbon and Bahia, alternate boats going to Santos; fare, $125 and $62. This line also has a steamer leaving London the 3d, 10th, 17th, and 26th of each month for the River Plate via Antwerp; fare as last mentioned.

* These statements will be found at the conclusion of report.

It also has a weekly coast steamer leaving Rio for Rio Grande, Pelotas, and Porto Alegre, for cargo only. This line has no subsidy, and carries mails free. Its agents here are Messrs. Norton, Megaw & Co.

The Royal Steam Packet Company, of England, sends a steamer from Southampton on the 1st, 9th, and 24th of each month for Brazil and the River Plate. The most regular ones are those leaving Southampton the 9th and 24th. Of these two the one leaving Southampton the 9th calls at Lisbon, St. Vincent, Pernambuco, Bahia, Rio de Janeiro, Santos, and thence to the River Plate countries. The one leaving the 24th also calls at Vigo, Spain, and Inaceio, Brazil, but omits St. Vincent and Santos. Returning, they leave Buenos Ayres the 15th and 29th, and Rio de Janeiro the 9th and 24th of each month. The usual time occupied from Southampton to Rio is from nineteen to twenty-one days, and from Rio to Southampton about twenty days. Arriving at Southampton, they connect with the same company's steamers to the West Indies on the 2d and 17th of each month. This line from England to South America formerly received a subsidy from both the British and Brazilian Governments, that from the British Government amounting to $150,000 a year; but it has received none from either Government for the past four years. It, however, receives now about £12,000 a year for mail service. The fare from Southampton to Rio de Janeiro is, first class £30 to £35; second class, £20; third class, £13. The company's agent here is Mr. E. W. May.

The Pacific Steam Navigation Company employ nine steamships, under the British flag, in trade between Liverpool and Valparaiso, passing through the Straits of Magellan, whence the line takes the name of the "Straits line." A steamer sails fortnightly on Wednesday from Liverpool, calling at Bordeaux, Lisbon, Rio de Janeiro, Montevideo, and thence to Valparaiso. Every other steamer also calls at Santavideo Corunna, Pernambuco, and Bahia. Time from Liverpool to Rio is 2[illegible] days, and from Lisbon direct to Rio 21 days. Fare, first class, from Liverpool to Rio, is £30. Returning, the steamers leave Valparaiso fortnightly on Wednesdays, and call at Montevideo, Rio de Janeiro, and other schedule ports. The most of these steamers are well suited for passengers. They enjoy no subsidy, and probably not over $5,000 for mail service between Europe and Brazil, their rate being $2.25 per kilo of letters and 20 cents per kilo of newspapers. The agents of the company in this city are Messrs. Wilson, Sons & Co.

In May last this port was favored by the first arrival from New Zealand of one of the steamships of the recently established line between London and New Zealand. The New Zealand Shipping Company, limited, with headquarters in New Zealand, now have a steamer leaving London each month for Lyttleton, New Zealand, via the Cape of Good Hope, and calling at Cape Town, and taking large numbers of emigrants. Time from London to Lyttleton, forty-five days. Returning via Cape Horn and calling at Rio, where they arrive in twenty-three days. These steamers take back to London cargoes of frozen mutton, fish, and game; butter, cheese, wheat, grass-seed, hides, and wool. The meat is frozen in the refrigerator of the vessel by steam-condensed air. Each steamer brings from 11,000 to 14,000 carcasses of mutton, and the trade appears to be successful. Indeed the steamers arrive here so full of cargo that they have to refuse offers of any at this port. They get good coal at Lyttleton (from the mines of New Zealand), and take fresh supply here. The steamers were built at Belfast, Ireland, and are chartered. The company, which expects a subsidy from New Zealand, is now building some of its own, and has one under way of 4,0

register tons. The trade is so prosperous that there is likelihood of a new competing line being started. Nor is it altogether improbable that by means of this new commercial route New Zealand provisions and flour or wheat will be brought here to compete with American products of the same class. (There is one flour-mill now in successful operation here.) The steamer British Queen arrived at Rio November 22, in twenty-five days from New Zealand, having a cargo of 11,000 carcasses of mutton, 4,000 rabbits, poultry, and fish; also, over 1,000 tons of wheat, 1,200 sacks of flour, 50 tons of butter, 10 tons of cheese, 200 sacks of oatmeal, besides some hides, and took here 800 tons of coal.

The Hamburg South American Steam Navigation Company send a steamer each week from Hamburg to Rio de Janeiro, calling at Lisbon and Bahia; one also calling occasionally at the Azore Islands for immigrants. About two steamers a month extend the voyage to the River Plate. A steamer leaves Rio de Janeiro the 5th, 13th, 20th, and 27th of each month for Hamburg, calling at Bahia and Lisbon. First-class fare to Lisbon, $125; Hamburg, $150; Montevideo, $45; Buenos Ayres, $53. These steamers average from 2,800 to 3,000 tons, and can carry 38,000 bags of coffee. This line has no subsidy, but has enjoyed a successful trade, and is adding new steamers to the route. Agents here, Messrs. Edward Johnston & Co.

The North German Lloyd have a line of good steamers leaving Bremen for Rio de Janeiro every month, calling at Antwerp, Lisbon, and the Canary Islands. Their trips are extended to Santos, and frequently to Montevideo or Buenos Ayres, whither they carry many immigrants from the Canary Islands. Agents in this city, Messrs. H. Stoltz & Co.

The line between Bordeaux and South America, Compagnie des Messageries, with central office at Paris, consists of six steamers of 2,400 to 2,500 tons, leaving Bordeaux the 5th and 20th of each month, and calling at Corunna, Lisbon, Dakar (Africa), Pernambuco, Bahia, and Rio; and from here proceeding to Montevideo and Buenos Ayres. Time from Bordeaux to Rio, nineteen to twenty days. First-class fare, $120 to $170. This line has been in operation twenty-five years, and enjoys a subsidy from the French Government. Agent at Rio, Mr. Thomas Bertolini.

The Chargeurs Réunis have six or more steamers, of about 2,500 tons each, leaving Havre the 2d and 17th of each month, and calling at Lisbon, Pernambuco, Bahia, Rio, and Santos; also stopping at the same places on the return voyage. First-class fare Havre to Rio, $110; third class, $52. This line has been running twelve years, and is understood to have a subsidy from the French Government. Agents here, Messrs. A. Leuba & Co.

The General Maritime Steam Transportation Company, of Marseilles, has for twenty years maintained a regular line of steamers between that city and Rio. They now employ steamers of from 2,500 to 5,000 tons, and which leave Naples the 9th and 24th of each month, calling at Genoa, Marseilles, Cape Verde Islands, and Bahia. The time between Marseilles and Rio is twenty-one days. From here they continue to Montevideo and Buenos Ayres. The central office is at Marseilles. Agents here, Messrs. Karl Valais & Co.

The Lloyds Austrian-Hungarian Steam Navigation Company have recently put on a line of monthly steamers of from 1,000 to 1,500 tons between Trieste and this port, the first having arrived in August last. They call at Pernambuco and Bahia, and from here they proceed to Santos. Returning from here, they call at St. Vincent, Lisbon, and Gibraltar. Their principal cargo from Trieste is flour, the cargo back being coffee. Agents at Rio, Messrs. John Bradshaw & Co.

From the foregoing it will be seen that there are eleven different lines of foreign steamships regularly visiting this port; that for this and other Brazilian ports there are three lines of weekly steamers regularly coming from Great Britain, two lines from Germany, three lines from France, and one from Trieste. Also that some of these lines have been in regular operation a quarter of a century, and that some of their vessels are among the largest and fastest ocean steamers. When, too, it is remembered that each of these European countries are represented in the ports of Brazil by twenty to fifty of their own citizens to one American, the odds that American export trade has to contend against must be quite apparent.

FOREIGN COMMERCE OF BRAZIL.

The returns of the foreign commerce of the whole empire are not published for a later period than the fiscal year ending June 30, 1882, being thus nearly two years behindhand.

From the last annual report of the minister of finance it appears that the foreign commerce of Brazil amounted in the year 1879–'80 to $169,709,133; in 1880–'81 to $178,031,352; and in 1881–'82 to $172,353,933, being an average of $173,000,000 a year. The imports amounted in 1879–'80 to $74,279,749, in 1880–'81 to $77,597,241, in 1881–'82 to $79,168,719, being an average of $77,000,000 a year; and the exports in 1879–'80 to $95,429,384, in 1880–'81 to $100,434,111, in 1881–'82 to $93,185,214, being an average of $96,000,000 a year.

The aggregate foreign commerce of all the other South American states per year is $275,000,000. That of the two neighboring River Plate countries, Argentine Republic and Uruguay, together amounted in 1880 to $138,000,000, or only $35,000,000 less than that of Brazil.

Statement No. 7 herewith shows the kinds, quantities, and values of domestic products of Brazil which were exported in the year ending June 30, 1882. A description of the imports into all ports for the same period is not attainable.

The following statement will show at a glance the value of the exports of seven leading products of Brazil during the three fiscal years up to June 30, 1882:

Descriptions.	1879-'80.	1880-'81.	1881-'82.
Cotton	$2, 230, 281	$2, 199, 278	$4, 154, 789
Sugar	13, 473, 491	11, 152, 093	15, 671, 737
Coffee	54, 291, 757	54, 237, 620	45, 043, 661
Hides	3, 861, 357	3, 555, 885	3, 394, 463
Tobacco	3, 294, 144	3, 248, 048	3, 402, 289
Rubber	5, 264, 275	5, 097, 951	5, 162, 322
Maté tea	1, 084, 417	1, 161, 903	1, 160, 054
Total	83, 499, 722	80, 652, 778	77, 989, 315

AGRICULTURE OF BRAZIL.

Mode of cultivation.—The agriculture of Brazil differs from that of the United States and Europe as much in its methods as in its products. The surface of the country is so abruptly broken that it does not admit, or at least in respect to the area thus far cultivated has not admitted of the use of the plow and the more modern implements to any considerable extent. The hoe is the universal implement for field-work, and this fact

l help very much to give an idea of the situation which agriculture ıpies. As the soil in Brazil, especially in the coffee-producing re- ıs, is a firm, red clay, mixed with gravel, the hoe necessarily is about ice as heavy and large as the field hoe in common use in the United ıtes. It often uses the place of a grub-hoe. I have seen a platoon hands in one rank moving over a field of low bushes, which they re leveling with the hoe, and apparently breaking the soil at the ne time. Another implement in considerable use is a sort of knife out as long and heavy as a cleaver and curved at the end. It is stened to a long wooden handle, and in planting is used both to open e soil and cover the seed.

A Portuguese who, at the latter part of the last century, wrote an able ork on the agriculture of Brazil, represented that the Indians in plant- g corn used a stick, the end of which had been burned and sharp ointed, to open the ground for the seed and to cover it. He shows that e destruction of the timber in order to plant was the same then as ow, that the system of the white people was scarcely better than that the natives, and he eloquently laments such waste of timber, as well the lack on the part of the settlers of the use of the plow.

Imported potatoes.—There seems to have been very little progress in ıe method of agriculture among the mass since then. It is important remember that the common potato and the small grains, wheat, oats, arley, and rye, do not flourish in Brazil. Wheat has sometimes been ised in the more southerly provinces, but it does not appear to have een a success. The common potato used for the table at Rio de Janeiro imported in light wooden boxes, containing less than a bushel each, om Portugal, France, and Germany. The sweet-potato and yam grow bundantly, but are scarce in the market, owing to the fact that trans- ortation is everywhere dear, both on land and water. Tomatoes can e grown, but the large variety is seldom seen, and onions, except small reen ones, are imported from Europe.

Mandioca.—An important substitute for the potato, especially among eople of African descent, is the mandioca, a vegetable indigenous to he country, and found cultivated by the natives on the arrival of the irst Europeans. Like the potato it grows beneath the soil, and is haped somewhat like a long sweet-potato, though more on the root order, and has a skin darker and thicker. The stalk is a little ta ler and stiffer than that of the common potato, and a field of it has a bluish green color. Of the two sorts in use, one is cooked like the potato, but has a firmer and more nutty consistency and flavor. The other sort has a poisonous quality in its green state, but, after a peculiar process, is made into a coarse meal, which is eaten commonly by laborers in its raw state mixed with a fatty gravy, and by people in general after a brief cooking in butter. Some quantities of mandioca meal have also been exported to Europe for the production of tapioca. Seventeen million pounds of Brazilian mandioca meal were received at this port the past year. The export of it amounts in value to only about $300,000 a year.

Rice.—Rice may be cultivated throughout the empire, but there is not enough produced for home consumption. The domestic production re- ceived at this port last year was 5,000,000 pounds.

Indian corn.—Maize, or Indian corn, is grown successfully in all parts of the country and forms one of the principal crops. None, however, appears to be exported. On the contrary, on account of the expense of bringing it from the interior, the principal seaports have been com- pelled to import some of their supply from abroad. In recent years the importation from the River Plate to this port has averaged about

115,000 sacks per year, at, say, $2 a sack, but owing to the steady i crease of the home supply the importation in 1883 amounted to onl 26,000 sacks, or 140,000 bushels, which was half as much as was receive at this port of domestic growth.

The Brazilian maize is generally the yellow sort, of medium size kernel, and is produced the most extensively in the provinces of Mina Geraes, and San Paulo, both adjoining the province of Rio de Janeir It is planted by hand in the months of September and October, and usually hoed twice. It is often grown on coffee plantations during th first five years after the coffee-plants have been started. A comm way of doing on new lands is to first cut the underbrush, burn it, a thereby kill the timber, and afterwards plant the ground with co the yield being about 40 bushels to the acre. Another season a n piece of virgin timber may be treated in the same way. Natura there is some outcry against such a devastating system, but it ava nothing. In a country pre-eminently adapted to corn growing it m seem singular that the market in a city like this cannot furnish th delicious and nutritious article of fresh green corn. One sees, it is tr in a few vegetable shops, or on the wooden trays of a few old color female peddlers, some ears of wilted and yellowish looking corn th has been gathered and kept fully a week, but the fresh, genuine arti is never to be had in the city. In the country it is cooked with t husk on.

Beans.—Beans, and especially black beans, form a common article subsistence, and though often grown as a separate crop are also co monly planted in the corn-hills at the last hoeing, and mature in thr months. Twenty-five million pounds of beans of domestic growth we received at this port in the last year.

SUGAR.

The richest sugar-producing district of Brazil lies on the easte border of the province of Pernambuco, where it has been under cul vation two hundred and fifty years. It is linked in history with ha fought wars between the Portuguese settlers—who were finally c querors of the country—and the natives, the French, and the Dut and still shows some traces of a quarter of a century of Dutch g ernment, and especially of the administration of that able statesma Prince Maurice, of Nassau. The most of the cane-growing land has elevation of only about thirty feet above the sea, and was original covered with forest. The soil is clay, deep, tenacious, and light c ored. The plantations generally contain a large area in which there considerable waste land, more or less hilly and thinly wooded. Ma of the planters' residences are large and well furnished. A good d of the work is done by small tenant farmers who get half the crop their labor, and whose dwellings are scattered over the estate. The ca newly planted takes fifteen to eighteen months to ripen, and then yiel annually for ten years and sometimes twenty years without replanti It is hoed twice, and in exceptional cases three times during the seas but the plow and cultivator are scarcely used. The crop occupies abo a year in maturing and is usually cut from October to January. Th which grows on low ground develops the fastest but contains less su than what is grown on the hills. The yield is from fifty to one hund tons of cane per acre. The product of white sugar averages at modern mills 8 to 10 per cent. of the juice. What are called the cent mills have small iron railways extending five or six miles in differ

directions over the cane-growing land, and they pay $2.50 to $3 per ton of cane delivered on the cars. The industry is remunerative and there are yet considerable areas of undeveloped sugar-growing land in that and other provinces. In the vicinity of Campos, province of Rio de Janeiro, are likewise some splendid sugar estates. There are also rich sugar producing lands in the vicinity of Piracicaba, Capivary, and other places in the province of San Paulo. Brazil's export of sugar averages about five hundred million pounds a year of the value of $14,000,000.

COTTON.

Cotton is another leading crop of Brazil and is raised extensively in Pernambuco and neighboring provinces on the more elevated lands and where the soil is lighter than that devoted to the cane. It is also largely grown in the province of San Paulo. It matures about the same time as the cane. Nearer the equator the plant lasts several years and becomes in fact a small tree; but in such cases the field is finally abandoned and new land planted. The best cotton, however, is that which is produced from annual planting. In the province of San Paulo, for example, the cotton crop is in blossom in January and picking begins in February. The cotton districts have fewer marks of wealth than are found in the sugar districts. During the three years ending June 30, 1882, the annual export of cotton from Brazil averaged 32,000,000 pounds of the value of a little over two million dollars.

COFFEE AND COFFEE PLANTATIONS.

Coffee, the chief crop of the country, is principally grown on large plantations by slave labor, but has not contributed much to the promotion of agricultural science, though in each of the last two years very well arranged coffee expositions in this city, under the auspices of the Association of Agriculture and Commerce, indicate a disposition in that direction. By far the greater proportion of Brazilian coffee is raised in the country tributary to Rio de Janeiro and on mountainous and hilly land, naturally timber-producing. The soil exclusively used for growing coffee is a deep or purple red clay, known in Brazil as "terra roxa." In the province of Rio de Janeiro 1,000 trees yield per year 704 pounds or 5½ bags; in the province of Minas Geraes, 800 pounds, or six bags; in the province of San Paulo, 1,440 pounds, or eleven bags, and in the vicinity of Campinas, 1,920 pounds, or 14½ bags.

The coffee tree sometimes yields at the age of three years. It is very sensitive. The injuries which it is liable to are frost, hail, excessive sunshine, which shrivels the fruit when green and tender; depredations by a small butterfly, which deposits its eggs on the leaf, but most of all an ant which is half an inch in length, and which undermines the tree. Large plantations annually expend a thousand dollars and upwards for bisulphate of carbon to destroy them. Fifty per cent. of the coffee plantations, with the slaves thereon, are under mortgage, and of these 30 per cent. are beyond redemption.

On coffee plantations the slaves habitually rise at 4 o'clock in the morning and at 5 o'clock start for their place of labor, and commence work by 5.30 or 6 o'clock, and work from twelve to sixteen hours per day. On the larger plantations 70 per cent. of the slaves are employed in the field, and on small plantations a larger per cent. are so employed. The coffee is gathered by stripping it by hand from the branches with the leaves. This is very different from the system in Java, where the

coffee berries are carefully picked one by one and deposited in a d basket. There, one family will cultivate 500 trees, while in Br single hand in this province cultivates from 3,000 to 7,000 trees showing what may possibly be the falling off in production i country after slavery ceases the following example may be cited a well-known plantation the slaves were set free and then hired on terms: They were allowed half the crop of coffee and all the r vegetables, and fruits for subsistence which they could raise o pieces of ground severally assigned them. The result was that t ter crops increased very much while the coffee crop diminished 320,000 pounds, which it had been with slave labor, to 88,000 p Nothing was done mean time towards starting new trees. The m ery for cleaning coffee and putting it in the most attractive co for the market is expensive, and on the large plantations, which sionally are found equipped with enterprise, sometimes costs $15, $20,000; and the machinery necessary for cleaning the crop of a farm could hardly be procured for less than $3,000. Many imm coffee farmers are consequently obliged to send their coffee to m in a crude condition and to submit to a heavy deduction in price o account.

The coffee crops of Brazil for each of the last two years has unusually large, amounting to some 6,000,000 sacks of 132 pounds but as the price was uncommonly low the money return for the was scarcely more than was received for the two and a half million exported in 1879–'80, the proceeds of which amounted to $54,0 It would seem that the crop now growing will be somewhat l than the yield of the past two years. From December, 1882, present date, the price for "fair" coffee has risen from 7½ cents cents per pound. There are large tracts of good coffee-bearing land be developed, and the average product will probably increase st for some years, and with increased intelligence and care on the p the laborer the quality will also improve. It is a fact of some s cance that the export from Santos in 1883 has amounted to 1,898,638 The total export of coffee from Brazil was in round numbers, in 18 2,600,000 sacks of the value of $54,000,000; in 1880–'81, 3,100,000 of the value likewise of $54,000,000, and in 1881–'82, 4,000,000 sa the value of $45,000,000.

The following table shows the export of coffee from Rio in each five fiscal years, 1878–1883, as taken from an official publication Rio custom-house:

Years.	Quantities.	Officia
	Pounds.	
1878–'79	481,410,131	$4
1879–'80	387,450,166	4
1880–'81	546,403,420	4
1881–'82	518,511,378	3
1882–'83	515,866,364	3

HAY AND GRASSES.

Hay cannot be expected to figure largely as a crop in a country there is grazing the year round. The statistics do not show tha hay of Brazilian growth is brought to this market. The impo past year to this port from the Argentine Republic was 29,752 and from Libson 50 bales, being nearly 1,000 bales less than in

The average price amounted to $35 a ton. The fiber of the hay is as coarse as that of large red clover. So far as I can learn, the only kinds of grass which flourish in this country are the creeping ginger-grass, the most common for cattle, called in Portuguese "Capine gengibre rasteiro," and the botanical name of which is *Paspalium pastorm*, and the honey-grass, called in Portuguese "Capine melado," and the botanical name of which is *Melnis glutinosa*. The latter springs up spontaneously after land has been cleared of timber. It is quite fragrant, and good in fattening cattle, but is rather weakening for working-animals. There is also a garden grass, used for lawns and borders, which has rather a wide but tender blade.

TOBACCO CULTURE AND MANUFACTURE.

Tobacco cultivation in Brazil began about the year 1600 in the province of Bahia, and from thence extended to all the other districts along the coast. Among those other localities earliest known for their tobacco product was the *Alagoas* (lake district) of Pernambuco, now the province of Alagoas, where a very excellent quality was produced, which rapidly commanded higher prices than that of Bahia. During the century following, the cultivation of tobacco increased so rapidly in these two localities that at the beginning of the succeeding century the average annual export had reached from Bahia 2,857 tons, and from the Allagoas 285 tons. The earliest export statistics obtainable for the whole empire are for the year 1839–'40, in which the export was 295,966 *arrobas* (32 lbs., or 14.69 kilograms), officially valued at 657,574 milreis. For the next thirteen years the exports averaged 8,000,000 pounds annually, with a valuation steadily increasing. During each of the years 1853–'55 the export was 22,000,000 pounds of the total value each year of $1,000,000. Not as much was exported in any one year again till 1859–'60, when an equal quantity brought $2,000,000. The next year the export diminished one-half; then for the fourteen succeeding years and including 1874–'75 the export averaged about 30,000,000 pounds a year, of the average value of $3,000,000. In 1879–'80 the export was 50,000,000 pounds, of the value of $3,294,000; in 1880–'81 44,000,000 pounds, of the value of $3,248,000; in 1881–'82 52,000,000 pounds, of the value of $3,402,000.

The principal tobacco-producing province of the empire is Bahia, though tobacco of a good quality is grown in every part of Brazil, from the Amazon to the Rio Grande frontier. Some localities in the province of Amazonas have long been known for the excellent quality of their tobacco, while in the Rio market one of the brands most esteemed comes from the interior province of Goyaz. The local consumption of tobacco is very great and principally in smoking. Bahia tobacco was principally exported in rolls weighing 8 arrobas or 256 pounds each. Of late years, however, large quantities of the leaves in bales are exported to Hamburg. Cigar factories are established in all the large cities throughout the tobacco-growing regions, which give employment to a large number of men, women, and children, and many of them give out work to be done by women and children in their own homes. The methods employed in the cultivation and preparation of the plant are very much the same as they were nearly two hundred years ago. Comparing the minute description given by Antonil at the beginning of the eighteenth century with the processes employed in the great majority of the tobacco plantations to-day it will be seen that little or no advance has been made. The labor employed is that of slaves, to whom are in great part assigned special parts of the work. In former times the work of

curing tobacco in rolls required much constant labor, the ropes composing each roll being unwound, twisted, and rewound during a period varying from ten to fifteen days. Now the large exportation of tobacco in leaf simplifies much of the work, the leaves being dried by suspension, two and two, under roof and then packed and repacked in bales according as the weather and curing require. The plant sometimes suffers from the ravages of insects, but the injury thereby does not appear to have been serious or common, and so little account is made of the matter that I have been unable, after repeated inquiries, to get exact information on the subject.

The tobacco of Brazil is generally characterized by its strength and dark color, particularly that of Bahia. In that province the method is to manure heavily, which occasions a very rank growth and strong flavor. In Minas Geraes the tobacco is somewhat milder, and lately some advance has been made in a few localities towards improved processes of curing. A recent result of this is the production by a Minas factory of a very fair imitation of "caporal," and "bird's-eye." The seed may be germinated in any season of the year, but the winter months of June, July, and August are generally preferred for planting the seed because germination and transplanting are brought into or near the rainy season. Tobacco plants planted in this season are considered the best growers and produce larger leaves. Those, however, which are germinated in the dry season and sustained by irrigation, grow with greater vigor and possess a better aroma. The land selected for the plants is cleared and surface worked with the heavy hoe, after which it is marked off into parallel rows about 3 feet apart, according to locality and size of mature plants. In transplanting, the young plants are set from 2 to 2½ feet apart, and are manured heavily in the pits opened for them. Care is necessary for a time to protect them from the sun, and to irrigate plentifully when the transplanting occurs in a dry season. The work of cultivation and keeping down the weeds is done entirely with the hoe, and only two or three times during the season. The work of cutting out suckers is performed once a week, and is usually treated as a special service.

In gathering in the crop, the planter usually waits until the plant is fully mature, as is determined by doubling and breaking one of the top leaves. In Bahia and many other places, however, the lower leaf is often picked by itself, and then in a few days the next, and so on as long as the plant will develop the lower leaves into what is classed first quality. These leaves are hung up two and two, under cover and across poles, twenty-four hours after picking and sweating. According to the old method where it is designed to twist the leaves into ropes, they are left hanging about two days when they are taken down, carefully freed from the heavy parts of the midrib, doubled in halves, and laid away for the rope twister. This operation requires considerable dexterity, and is intrusted to the best slave on the plantation. The operation requires a rude windlass, which is slowly turned in winding the rope which is twisted by hand. A boy is employed to hand leaves to the twister. These ropes are unwound and rewound once or twice a day for a period of 10 to 15 days, according to the weather, and are twisted a little harder each time. In curing, the tobacco grows darker and darker until it becomes jet black. The juices exuding from the rolls are carefully caught and preserved until the last winding when, mixed with lard, sirup and various aromatic herbs, they are used to pass the rope through previous to the final winding. The last step is to cut the cured ropes in certain lengths and to rewind themospon fashion upon

light wooden sticks about two feet in length, the winding being very compact and regular. The rolls are then covered with leather or strong canvas, when they are ready for market. In former times these rolls (*rolōs*) were made to weigh 8 *arrobas* (256 pounds), though 3 arroba rolls were made for the home market. Now the weights vary with different localities. The large exportation of tobacco in leaf has considerable changed the character of tobacco growing in Bahia; the process of curing and packing the leaf being simpler than the old process of manufacturing *rolōs*. The processes employed in this are primitive, and do not differ from those found elsewhere.

Tobacco growing in Brazil is heavily protected and taxed, nearly all the provinces imposing separate protective taxes in addition to those imposed by the General Government. Besides these the municipalities are permitted to levy taxes on the article. The present export tax on tobacco in Bahia (general and provincial) amounts to 18 per cent.

LABOR AND WAGES IN BRAZIL.

Agricultural labor.—The average wages of a free working man at agricultural work and in contracts for five months are 43 cents a day—the present value of a Brazilian millreis in currency—with board and lodging. At such wages he is expected to do all the work of cultivating 3,000 coffee trees (on old plantations one hand will sometimes cultivate 6,000 trees) and of gathering and taking care of the crop; or, what is equivalent, to cultivate 3½ acres of cane, yielding from 1,600 to 6,400 pounds of sugar, worth $6 per 100 pounds. He would not be able to cut all the cane grown on 3½ acres, as it has to be cut in a short time, but he would do his share of the cutting. He would, besides, in cultivating other products like maize, beans, and vegetables, and in tending stock, raise the provisions necessary for the subsistence of himself and family. Perhaps one free agricultural working man in every ten can read, but among women the number who can read is less.

The means of diversion and recreation among this class are limited. On Sundays the men visit the neighboring village or town, where sometimes there is a horse-race. Once in a while an ordinary circus comes round, which they attend. In a community of small farmers, when on a holiday, a number are assembled socially, pitching quoits is not an uncommon amusement. On such occasions the women present, young and old, will sit looking on, smoking tobacco in pipes, a habit which is very common. Fishing with the rod is a common diversion of both sexes. At weddings, baptisms, and christenings when a large party of relatives and friends are assembled, there is dancing on the earth floor of the dwelling, on which occasion for music some of the men play a monotonous strain on the banjo, the violin also sometimes being used, and the women accompanying on the castanet and tambourine. In these communities the subsistence consists of flour of mandioca, black beans, chickens, which in Brazil are very abundant, pork, which is also produced abundantly, rice, sweet potatoes, and yams. Coffee, which is freshly roasted every two or three days, is served frequently during the day, and always among rich and poor, when a visitor comes in. It is served in small cups without milk and sweetened with home-made sugar. Water is always kept boiling in order to prepare coffee at short notice. Women as well as men occasionally take a glass of the rum of the country, but the former scarcely ever, and the latter very seldom drink to excess. Women go to confession once a year.

Mechanical labor.—In respect to common and mechanical labor at Rio

de Janeiro, it may be said that common laborers are paid $1.30 a day; ordinary stone masons receive but little, if any, more, which is probably owing to the fact that the cutting of Rio granite, which is used for foundations and trimmings of all buildings, is an extensive employment. The majority of stone-cutters are Portuguese. Good skilled mechanics are paid $2.60 a day, while one who takes charge of his work, and directs others, gets from $4.30 to $5.30 a day. The wages of mechanics at steady work will average from $2.25 to $3.50 a day. Painters get from $1.75 to $2.25 per day.

Food prices.—There are but few workingmen's benevolent associations. Ship-carpenters, stone-masons, and one or two other trades are about the only ones that have them. A part of the earnings of the working classes are squandered in lottery tickets, lotteries still being sanctioned by the Government, which derives some revenue therefrom. The very cheapest at which a common laborer could live at Rio, including subsistence and lodgings for himself and family, would be 43 cents a day. The average undoubtedly expend more. The living apartments of the laboring classes are small and poorly ventilated. Good bakers' bread, of wheat flour, in long rolls, with hard crust, is becoming more and more used by them, though a main part of their subsistence is dried salt beef stewed with black beans. Bananas are the most common fruit eaten, and are to be had always; but there are some weeks, say along in July, when oranges are the best, and cost only a cent each, and are then much used by the poorer classes. The dry-cured salt pork of the country, which comes in long rolls in upright circular baskets, is of good flavor, and is much consumed. Fresh beef is not so dear as in the United States, and is generally good. Owing, perhaps, to a lack of enterprise, fresh fish is exceedingly dear, though there are several varieties that are excellent. Salt fish, imported from both coasts of the North Atlantic, is an occasional article of the workingman's subsistence. The Brazilian rum costs only 1 or 2 cents a small glass, and is a frequent beverage.

Clothing.—The slipshod slipper has always been, and still continues to be, universally used by the working classes in Brazil, though there are many, and especially among colored people, who go barefooted. The ordinary workingman, as seen in the street in his every-day garb, wears a common black felt hat, however warm the weather may be, a pair of blue or light-colored cotton trowsers, generally without suspenders; a thin knit merino shirt, and occasionally a white or calico shirt over it. Scarcely one in fifty wears a cravat or anything about the neck. About every one, however, is provided with a dark woolen suit for extra occasions.

SLAVERY.

Slavery having existed, as it still does, in all parts of Brazil, it has never occasioned that bitter sectional feeling which it caused in the United States. It could therefore have scarcely led to such a catastrophe as it produced in our country. Still, the Brazilians, in taking steps for emancipation, were probably very much influenced by American experience; the steady and industrious behavior of the freed people in the United States affording an especially powerful argument in favor of liberation. And it appears to me the Brazilians are entitled to praise for wise statesmanship in having solved their slavery problem in a peaceful manner, even though their system of abolition is a very slow one.

The one important feature of the emancipation act of Brazil of Sep-

tember 28, 1871, is the provision that all children born of slave mothers after the passage of that act shall become free on attaining the age of twenty-one years. A few hundred slaves belonging to the crown were declared free; but the great mass of slaves born previous to September 28, 1871, were left in bondage. However, the act made some provision for a fund for the purchase and liberation of slaves. It provided that the tax on slaves, the tax on their sale or bequest, the proceeds of certain lotteries, the fines collected under the act, together with public appropriations and private donations should constitute an emancipation fund to be duly apportioned among the several provinces. The whole amount raised from these sources since the passage of the act has been in round numbers, $6,000,000. By it 15,320 slaves have been purchased and set free up to this time, being at an average price for each one of $300. It is estimated that some 70,000 slaves have also been set free by private emancipation in the same time; also that 180,000 have died, making a decrease of 265,000 in the number of slaves since the passage of the law. The number of slaves in Brazil September 30, 1873, according to the registration which was then assumed to be complete, was 1,540,796, so that the number now in the Empire must be 1,275,476. Private emancipation is a matter of frequent occurrence all over the country, and is apparently encouraged by the popular sympathy. Indeed, in some localities the cause advances with enthusiasm. For example, in the province of Ceará there are eight municipalities now wholly free which only two years ago contained 8,000 slaves. Still, it must be remembered that there are over a million of slaves in the Empire, the most of whom are tenaciously held in the richest agricultural districts.

In regard to the children born of slave mothers after September 28, 1871, and who, by the terms of the law, are absolutely free at the age of twenty-one years, it may be supposed that such jealous and rigorous means of identity have been thrown around them that they will be able effectually to claim their liberty on the very day of their majority. As a means, and the only means to this end, the emancipation act provided that they should all be registered in books kept by the parish priests. A heavy obligation undoubtedly rests upon the Government to have these records sacredly made and kept. It must, therefore, occasion regret to know that the work does not appear to have been very carefully attended to. The minister and secretary of state for the department of agriculture, commerce, and public works, in his annual report, dated the 10th May last, states that the returns scarcely show with certainty that in the city of Rio de Janeiro and in thirteen provinces on the 30th of June, 1882, the number of children who had been born of slave mothers since September 28, 1871, was 173,776. Returns in respect to such minors were wholly wanting from seven provinces, including the three large and populous agricultural provinces of Bahia, San Paulo, and Minas Geraes.

As showing the mortality of this particular class of population, I would state that the number of children born of slave mothers in the municipality of Rio de Janeiro from September 28, 1871, to June 30, 1883, was 8,535, of whom 2,522, or over 26 per cent., had died.

PRODUCT OF RUBBER.

This industry is the principal resource of the two great provinces of the Amazon Valley, Pará and Amazon, and its product occupies the third

place in the national exports. The rubber tree requires a growth of twenty to twenty-five years before it begins to produce, hence little or nothing has been done for its propagation. The milky sap which forms rubber is taken from the wild tree, which grows scattered through the forests of the Amazon and many of its affluents. The industry, being principally in the hands of an uneducated and half civilized nomad population of Indian mixture, is of a crude character, and is pursued mostly on the national domain. Nothing has been done to improve the system of labor. A wasteful and exhaustive system has been followed for half a century, and the consequence is that millions of rubber trees have been destroyed and many others abandoned from premature and excessive use. There are instances of groves of trees, which, by careful use and by not permitting them to be tapped in the months of August and September, in which they change their leaves, have been yielding for thirty years, and still are in good producing condition; but the common practice is so wasteful that many well informed people apprehend that unless some remedy is applied this rich resource will, before long, suffer a serious and perhaps fatal decline.

The rubber tree thrives only on soil which is annually overflowed to a depth of three or more feet, and prefers the lowest and most recent river deposit. The rubber-gatherers are temporary squatters, and their usual dwelling is a hut with low roof of palms, beneath one end of which there is a raised floor or framework of lath, one or two yards from the ground, to which the occupants retreat at high water. Mr. Franz Keller, who explored the Madeira River, in 1868, thus describes the common way of rubber gathering:

> Narrow paths lead from the gatherer's hut through dense underwood to each separate tree, and as soon as the dry season sets in he betakes himself with his hatchet to the trees to cut little holes in the bark. The milk-white sap immediately begins to exude into pieces of bamboo tied below into little clay cups set under the gashes to prevent its trickling down the stem. He travels thus from tree to tree. On the return visit he pours the contents of the bamboos into a large earthen vessel provided with straps, which he empties at home into a large turtle shell. Without delay he sets to coagulate it with smoke of palm nuts, and pours a little of the milk evenly on a light wooden shovel, which he thrusts into the thick smoke issuing from a little narrow chimney made by the neck of an earthen bottle. He moves the shovel several times to and fro with great rapidity, when the milk is seen to consolidate and to take a grayish-yellow tinge. Thus he puts layer upon layer, until at last the rubber on both sides of the wood has reached a thickness of two or three centimeters. Cutting it on one side, he takes it off the shovel and hangs it in the sun to dry. A good workman can thus prepare five or six pounds of solid rubber in an hour. From its initial color of clear silver gray it turns shortly into a yellow, and finally becomes the well-known dark brown of the rubber, such as it is exported. The more uniform, the denser and freer of bubbles the whole mass is found to be, the higher the price it brings. Almost double the value is obtained for the first-rate article over that of the most inferior quality, which is nothing but the drops collected at the foot of the trees.

The export of rubber has increased rapidly in the past few years. From Pará and Manaos, the two principal ports in the Amazon Valley, the export during the five years from 1839–1844 was 2,520,000 pounds, of the value of $395,000. In the five years 1854–1859 it had increased to 21,500,000 pounds, of the value of $4,000,000; and in the five years 1874–1879 to 66,000,000 pounds, of the value of $22,000,000; in 1882 the export was about 10,000 tons, of the value of $15,000,000.

A very heavy export duty is collected on this article, the imperial duty being 9 per cent. on the value, and in addition 12 per cent. by the province of Amazon, and 13 per cent. by the province of Pará, making 22 per cent. on all that is exported from the latter province, and 21 per cent. on all exported from the former province.

COMMERCE OF THE AMAZON VALLEY.

There has been an increase in recent years of the commerce of the Amazon Valley which is here regarded as remarkable. The revenue of the province of Amazonas, whose capital, Manaos is at the mouth of the river Negro, rose from $210,000 in 1871–'72 to $731,630 in 1881–'82, thus having nearly quadrupled in ten years. The custom house at Manaos, its principal port, was established in 1868–'69, and in that year collected $8,500. In 1881–'82, eleven years later, it collected twenty-five times as much, namely, $213,238. In the six years from 1876–'77 to 1881–'82 the export of rubber from that province more than doubled, and in the last-mentioned year amounted to over 8,000,000 pounds. The commerce of the adjoining province of Pará shows more rapid growth. Its revenue rose from $1,737,167 in the fiscal year 1877–'78 to $4,500,000 in 1882–'83. The exports of both provinces together in 1879–'80 were as follows:

Rubber, 6,880,482 kilograms	$5,141,850
Brazil nuts, 6,738,580 kilograms	619,000
Cacao, 1,539,954 kilograms	421,000
	6,181,850
Value of all exports	6,509,000
Value of exports besides rubber, Brazil nuts, and cacao	327,150

This shows the predominating value of the rubber exports. The exports from Pará alone rose to $16,343,769 in the calendar year 1882.

The city of Pará, situated at the gateway of the Amazon trade, appears to have before it an important future. It has of late rapidly improved Mr. Prindle, consul at Pará, in a recent letter to me says:

> Pará is growing rapidly. Great strides have been made within the past two years. All of the streets in the business portion of the city and many others have been sewered, and have been paved with granite blocks, and the sidewalks everywhere substantially and handsomely curbed and flagged; many large and costly buildings have been erected; extensive covered wharves have been built; water has been introduced, and the city has been during the same time literally gridironed with street railways. The population has increased faster than the houses; and for a long time past newcomers have found great difficulty in finding quarters, and much discomfort in consequence.

Mr. Prindle adds, however, that he regards the climate as enervating, and in respect to the sewers he states that they are nowhere trapped, and that the odors arising from them are anything but agreeable.

NAVIGATION OF THE AMAZON.

The Amazon Steam Navigation Company—British since 1872—receives a subsidy from the Brazilian Government of $206,400 a year, which expires in 1887, and runs screw and other steamers regularly from Pará to distant ports on the Upper Amazon and its principal tributaries. The traveler or merchant can in about ten days from the time he leaves the United States reach Pará, near the mouth of the Amazon, and in fifteen to twenty days more may find himself almost at the foot of the Andes, with no more discomfort than is experienced in a steamboat trip on the Missouri. Good steamers leave Pará the 1st, 10th, and 20th of each month for Manáos on the Amazon, at the mouth of the river Negro, 927 miles from Pará, stopping at about nine places, and making the trip in eight days; first-class fare, board included, one hundred milreis, or, say, $45. The 28th of each month a steamer leaves

Manáos for Iqutos, in Peru; distance, 1,152 miles, and fare $50. To Tabatinga, on the boundary of Peru, the fare is $35. A steamer leaves Pará for San Antonio, at the head of navigation of the Madeira River, the 7th of every month; distance, 1,723 miles; fare, $80. A steamer leaves Pará for the Purus, another of the remarkable navigable streams of Brazil, the 17th of every month. Distance to Anajas, the end of the route, 2,387 miles. Fare to Hyutanahan is $86, and the distance 1,997 miles. For the river Negro a steamer leaves Pará the 10th of every month. Fare to Saint Isabel, a distance of 1,350 miles, $85. The officers on these steamers are Brazilians, and the crews Indians. The latter, however, are not only very docile, but are expert navigators. It is a noteworthy fact that a considerable part of the fuel consumed by the steamers is coal brought from England, the inhabitants along the Amazon being so absorbed in the production of rubber, owing to its recent rise in value, that labor enough cannot be had to furnish the steamers with wood. Americans proposing a journey up the Amazon should, of course, come with as little baggage as practicable. A gentleman would do well to be provided with two summer suits of wool and a thicker suit suitable for autumn or cold weather, as a day of windy and cold weather may occasionally be experienced. The wet season is from January to May. In going from here to Pará, passage can be taken on the well-managed steamers of the Northern Brazil Navigation Company, which leave three times a month, calling at seven ports, and make the trip in 14 days, the distance being 2,100 miles; fare, $90. This line is about putting on a steamer between Pará and Manáos. Also the new American steamers call at Pará twice a month on their return voyage from here, and at three other ports between here and Pará.

MADEIRA AND MARMORÉ RAILWAY.

With a view to establish an international route to Bolivia, the Brazilian Government has at various times encouraged the building of a railroad about 200 miles around the falls and rapids of the Madeira River, one of the great tributaries of the Amazon. There is continuous navigation for ocean steamers up to the falls of San Antonio on the Madeira, and the proposed railroad starting from there is intended to terminate at a point on the Marmoré River, above which there is navigation for river steamers several hundred miles in the territory of Bolivia. Aside from its bearing commercially, the scheme has an interest to Americans in consequence of some of our countrymen, in connection, as I am informed, with the Reading Railway Company, having lost in it some half a million dollars. Colonel Church, an American civil engineer, had received encouragement from both the Brazilian and Bolivian Governments to build the road, and an English company had subscribed money with which he expected to accomplish his undertaking. Relying upon this, American contractors, with supplies and material, furnished, as is understood, by the Reading Railway Company, and with several hundred laborers, came to Brazil early in 1878, and proceeding up the Madeira River to San Antonio commenced the construction of the road. I am informed that they built twelve miles of road from San Antonio to Macaco, with sleepers and rails laid, but without ballast, and graded 20 miles of road above Macaco. In the dry season in that region the river falls about 30 feet, numerous lagoons also dry up, and the locality becomes exceedingly unhealthy. Partly from this cause many of the workmen became sick, and many left. Judicial proceedings in England prohibited the English company from advancing

money, and the contractors, not receiving any from that source, failed to pay the workmen. I have not learned the particulars of the hardships which the latter experienced, or to what extent, if any, they were imposed upon. The scheme, of course, failed. Those in the United States who furnished the material suffered, as I have said, a serious loss. Besides rails for about fifty miles of road, they brought some rolling-stock; and all this, with many implements and buildings, were left on the spot, and, of course, have suffered great waste.

During the past year the Brazilian Government sent a party of engineers to resurvey this Madeira and Marmoré route, but some of them took sick; one or more died. The work was a while suspended, but is now in progress.

THE PULIC LANDS.

In the opinion of not a few patriotic and sensible Brazilians, the great obstacle to the progress of this country is her land system. According to them, and I believe they are correct, her development and population will increase at only a very slow pace as long as this system continues. The greater part of the uncultivated land is held, not by the State, but by individuals, and in tracts large enough often to make good-sized counties. It is not taxed, and having been obtained at a small price, the proprietors hold on to it year after year for speculation or to gratify their vanity. No people inhabit it, no roads traverse it, and it remains an obstacle to communication and development. Not being obliged to pay any taxes on it, the proprietors can easily afford to hold it in its unproductive condition. It may be for his interest to sell some of it, and of course, there are often cases where an owner will sell on favorable terms, but when he does sell the purchaser must pay to the Government a tax of 6 per cent. on the purchase money. Practically, therefore, the Government offers a premium for having its vast interior kept a wilderness. The principle of its taxation is to tax the products of land and not the land itself. This might be a reasonable system for land mostly under cultivation; but in the case of Brazil, where only an exceedingly small part of the land is under cultivation, it operates unfavorably. To exempt the land itself from taxation is simply to confer a peculiar privilege upon land-holders to the prejudice of the most vital interests of the country. If the owners of these wild lands were required to pay a fair tax on their valuation, they would soon be compelled to dispose of a portion of them to people who would cultivate them. Inducements would then offer for the best class of immigrants—those who wish to own and with their own hands till the soil. The country would then soon enter upon a new era of prosperity.

The revenue for local government, for roads, and for schools is raised by a tax on houses, on animals, on professions, on mercantile business, on inheritances, on conveyances of property, and on other things, and if, as may happen, a municipality lacks the money to build a local highway, it obtains the money from the provincial treasury, and when the latter is short it is supplied from the national treasury; so that instead of any of the uncultivated areas of fertile land contributing anything to any of the local expenses, such as roads, the money is liable to come in part from the export tax on rubber, coffee, sugar, and other articles.

It is frequently said here that a land tax could not be collected in this country. It appears that some such tax was attempted twenty-five or thirty years ago, and came near producing a revolution. I am not acquainted with that law, but have no doubt its failure was owing to some impracticable provision, as *impracticable* perhaps as the scheme at-

tempted here a few years ago to collect a tax on street-car tickets. The people of this country are, as a rule, law-abiding, and I have no doubt whatever that a fair and equitable land-tax law would in due time prove successful. By the laws of many of the separate States of the United States taxes on land become due on and after the first of January of each year. If they have not been paid by the first day of June following they are deemed delinquent, and a penalty of 10 per cent. immediately accrues. Publication is then duly made of the facts in form of judicial process, and if the owner still fails to make answer or pay the taxes, a judicial order is recorded for the sale of the land and afterwards the land is sold at public auction to satisfy the amount of taxes and charges to which it is liable. If no bidder offers the necessary amount, it is bought for the State. It may be redeemed within two years by any person having an interest therein on payment of the delinquent taxes, penalties, and costs, and interest on the amount for which the land was sold at the rate of one and one-half per cent. per month, being eighteen per cent. per annum. These provisions make it for the advantage of the owner of land to pay his taxes promptly. The tax collector does not make personal demand of the taxes, but the owner must go to the proper office and make payment. A law substantially of this character, but prudently adapted to the situation of the people, could be enforced in Brazil without difficulty, and its effect would be very beneficial. As, however, a preponderance of power in the legislature is, perhaps, in the hands of large landed proprietors, such a law could hardly be passed until public opinion had been considerably instructed and awakened in regard to the subject.

RAILROADS.

Steady increase has been made in extending several lines of railroads. Some hundreds of miles of new road have been opened for traffic during the year. New lines have also been commenced, and there is reason to suppose that the development will annually increase, though the broken surface of Brazil generally, and especially the mountains near the seacoast, are great obstacles to rapid railroad development. The principal railroad, being the one which runs west from Rio de Janeiro, crosses two ranges of mountains. The railroad running from Santos (a coffee port south of Rio) into the interior of the province of San Paulo, has first to climb a mountain 2,000 feet high. None of the railroads have yet penetrated to the vicinity of wild or public lands. Some of them traverse extensive areas of uncultivated land, but as yet no grants of land have been made in aid of railroads. The State, however, as well as the separate provinces, has extensively guaranteed the payment of interest on railroad capital. Its annual burden for the payment of such interest amounts now in round numbers to nearly $3,000,000. The rails for all the roads have to be imported, and the greater part are purchased in England. The most of the locomotives, however, are imported from the United States. The coal consumed by the locomotives is also imported.

There are now three thousand miles of railway in operation in Brazil. There is scarcely a province bordering on the ocean but has one or more railways, and every one leads to the west or towards the interior. In the most southerly province, Rio Grande do Sul, the Porto Alegre Railway, now open 91 miles to Cachoeira, is being built by the State, and partly for strategic purposes. It would be tedious to specify all the different railroads, but it may be of interest to mention some of the routes which are tributary to this city, and by which the visitor could

from here penetrate different and attractive sections of the country. Taking the Cantagallo road, which starts from Nitheroy, on the opposite side of the harbor from Rio, one can go to Macaco, 110 miles, in a northwesterly direction, through a mountainous and picturesque yet productive coffee region, and touching at the populous summer resort of Novo Friborgo. On the Dom Pedro second railway, which is the trunk and sole line leaving Rio de Janeiro, traffic is open in a westerly direction to Itabira, a distance of 325 miles. Turning northerly from this road at Entre Rios, on the Leopoldina line, the journey can be extended to Geraldo, 288 miles from Rio. In a southwesterly direction the Dom Pedro road, after crossing the seacoast range, connects with the Paulista Railway, which runs from Santos to San Paulo, and thus with the system of railways in the province of San Paulo. Direct railway communication is thus afforded on the Sorocabana road to Tieté, 411 miles from Rio, on the Paulista road, via the important centers of Jundiahy and Campinas, to Porto de Joâs, 468 miles from Rio; on the Ituana branch from the left and southwesterly to Piracicaba, 558 miles from Rio, and on the Mogyana branch, on the right, to Ribeirao Preto, 517 miles from Rio. All of these lines traverse a long-settled and productive agricultural section. The last-mentioned branch line and the trunk line appear to be pushing on to the River Paraná in parallel lines.

A liberal policy has been shown towards railroad enterprise; and the Government it is thought has been even too liberal in that regard for its present financial interest. Several American civil engineers have gained well-merited distinction by their services in this country, but the field now appears to be occupied by native talent. However, as is natural, several English railway companies employ English engineers. In subordinate positions in the Brazilian railway service the pay is poor, and no inducements exist for Americans.

IMMIGRATION.

Notwithstanding an abundance of spacious steamships, affording cheap transit, arrive here regularly from Mediterranean and all other European ports whence emigrants are accustomed to sail, the striking fact exists that only a comparatively small number are attracted to this country. Assuming that third-class passengers are immigrants, the whole number who arrived at this port during the year 1882 was 25,845, of whom 10, 562 were Italians, 9,269 Portuguese, 3,738 Spaniards, 1,538 Germans. During the first half of 1883 the number arriving was 14,225, of whom 6,320 were Portuguese, 4,997 Italians, 1,973 Spaniards, and 667 Germans. The whole number arriving during the year may be put down at not over 30,000. During the five years (1874–1879) the State expended the immense sum of $13,000,000 to promote immigration and support immigrants.

A scheme for introducing Chinese laborers for contract work on plantations has this year met with signal failure. A committee of Chinese subjects visited Brazil to see for themselves how the plan would work, but decided against it for its lack of the element of freedom. They could not, they said, be a party to anything but free emigration. In recent years the river Plata countries have been receiving a much larger share of immigrants than Brazil. For example, while from 1857 to 1862 Brazil received 92,467 immigrants, and the Argentine Republic 33,020, the situation was altered in the period from 1878 to 1882, during which the Argentine Republic received 176,385 and Brazil 92,620.

On the interior highlands, especially in the more southern provinces, where the climate is salubrious, agriculture can be followed with profit and pleasure; and it only requires the adoption of proper measures to secure for Brazil a very great increase of her immigration. The Government appears to desire immigration. It has in this city a bureau of colonization and of immigration, with a director-general, assisted by several clerks. It has published documents, accompanied with fine maps, in respect to as many as five different provinces, with descriptions of their resources, in the Portuguese, French, German, and Italian languages. Parties wishing to emigrate to Brazil would do well to address themselves to that bureau; but the ground ought to be looked over in person or by a competent and reliable agent before fully deciding to emigrate. It would naturally be supposed that in a country as large and thinly settled as Brazil the Government would find itself able to donate land to settlers in generous quantities. But such is not the fact. The Government is itself in the market to buy up land that it may be able to resell to actual settlers on moderate terms. On the remote frontiers are large tracts more or less occupied by Indians—who, however, are not regarded as having any title whatever to the soil—which probably belongs to the Government. There are no maps which distinguish public from private lands. And owing to the prodigal grants of land in former times, many of which have no record, the title of very much of the supposed public land is involved in doubt. The only wild lands that are surveyed, and that are practically open to provinces of Espirito Santo, San Paulo, Paraná, Samta Catharina, and settlement, are those which have been set apart for colonies in the Rio Grande do Sul. The areas surveyed in each of these provinces do not exceed the size of an ordinary county in the United States. Such new land, adapted, we will say, for coffee-growing, and situated in the province of Espirito Santo, twenty-four hours from Rio de Janeiro, in the neighborhood of German and Italian colonies, can be bought of the Government in tracts of one hundred and twenty-five acres at $300, being at the rate of $2.40 per acre. Payment may be made, if desired, in five annual payments. The land has an elevation of two thousand feet above the sea, and is hilly. A good part of the local transportation would be on mule back or by boat. Through the manner of life is attended with the usual drawbacks of new settlements, the colonies as a rule enjoy good health and are prospering financially.

THE SAN FRANCISCO VALLEY.

Among the many great river basins of Brazil the San Francisco claims attention next after the Amazon for the degree of its development and the extent and variety of its agricultural resources. This river takes its rise about three hundred miles northwest of Rio de Janeiro, and flowing in a north and northeasterly course through a broken country, whose general surface is about two thousand feet above the sea, finally reaches the ocean near the tenth degree of south latitude and midway between the two important coast cities, Pernambuco and Bahia. Its valley is a thousand miles long and from one hundred to two hundred miles wide, being inclosed on both sides by ranges of not very high mountains, whose spurs and foot-hills occasionally extend to the river banks. Its scenery is perhaps more picturesque than that of the Upper Mississippi, as it includes not only both bluffs and knobs single and in groups, but vast plains, sweeping undulation, and grand mountain views. Fine stretches of limestone country, richly covered with forest, are here

and there succeeded by sandstone, with meager soil and scanty vegetation. Scattered along the valley are many plantations and farms under cultivation. Cotton is grown considerably, especially in the lower valley, yielding 500 pounds of clean cotton to the acre. Maize and sugar-cane are also important crops. Oranges, bananas, melons, and figs are among the common fruits. The principal agricultural pursuit, however, is stock-raising, and that is the industry for which most of the land is best adapted. About all the land in this great valley is held by private individuals, some owning a hundred and sixty square miles or more each. Among the towns there are two or three with a population of four thousand. From the graphic and excellent work of Captain Burton (Highlands of Brazil), who explored this river nearly twenty years ago, and who estimates that its valley can sustain a population of twenty millions, it seems there are spots now in ruins on its banks which were under successful cultivation a century ago by the Jesuit missions. The Paula Affonso falls of this river, 273 feet high, and probably the grandest in Brazil, occur about one hundred miles from its mouth. Around these falls a railroad (Paulo Affonso), 81 miles in length, has been built by Government aid, which, starting at Piranhas, on the lower navigable part of the river, in the province of Alagoas, terminates on its upper navigable waters at Jatobá, in the province of Pernambuco.

This railroad does not yet, however, pay its running expenses. Improvements of the channel of the Upper San Francisco have been going on this year, but were lately stopped by high water; and I might here say that this river sometimes rises 40 feet. Results thus far seem to verify the estimates of the American engineer, Col. W. M. Roberts (who fell a victim to a fatal illness incurred while exploring this river), that by the prudent expenditure of $315,000 continuous navigation for stern-wheeled steamers drawing 3 feet would be afforded at all seasons from Jatobá up to the falls of Pirapora, a distance of 950 miles. The first steamboat to ply its upper waters was in 1867.

Railroads to tap this valley are pushing on from three important seaports. One from Pernambuco, the first section of which was opened in 1858, running in a southwesterly direction, through a sugar country, has been in operation, 77 miles, to Palmares, a year, and is now completed to Marayal, another station beyond, but is only a third part of the way to its destination. Another, from Bahia, running in a northwesterly direction, is in operation 166 miles, to Salgada, being over a third part of the way to Joazeiro, its destination, on the right bank of the San Francisco. The other is the Dom Pedro II Railway, running from Rio de Janeiro also in a northwesterly direction, and finished 325 miles, to Itabira, on the headwaters of the San Francisco, from which point it will descend the valley. These three roads will in a few years aid much in the development of that important region.

RIO DE JANEIRO TO BARBACENA BY RAILROAD.

The distance by the Dom Pedro II Railway from Rio de Janeiro to Barbacena, a prominent interior town in the province of Minas Geraes, is 234 miles. The route is through one of the oldest and best coffee producing districts in Brazil, and in that distance passes through sixteen tunnels and crosses two separate mountain ranges about as high as the Alleghanies where crossed by the Pennsylvania Central Railroad, and which are covered with a fair but not dense growth of deciduous trees, and on the more elevated parts some tropical pines of medium size. It is be-

tween these ranges that the road winds for 60 miles along the banks of the wide but frequently shallow Parahyba River. The country generally is exceedingly broken and hilly, the hills for the most part being twice as high as the bluffs of the Upper Mississippi, and of conical form. They seem to vary from 100 to 1,000 feet in height, and often reach the dignity of mountains. Where uncultivated they bear thrifty yet small second-growth timber; but after getting in the vicinity of Barbacena they become devoid of timber, and in the dry or winter season have the brown and smooth appearance of a closely-fed sheep pasture. Very few rocks are to be seen, but in some places anthills of smooth, hard exterior, and four or five feet high, are disagreeably numerous. The prevailing character of the soil is a red clay mixed with gravel, and is evidently fertile, but there is nothing astonishing or particularly beautiful in the natural vegetation. At long intervals some fine, tall trees with large and handsome orange-colored blossoms may be seen, and there is occasionally a blending of colors that about equals, but certainly does not surpass, the North American foliage after an autumn frost. There are some fences of rails laid upon crotched stakes, but the division lines between estates often consist of ditches with the earth thrown up on one side, resembling rifle-pits, and being straight and of red color, are at a distance interesting objects. Not more than a twentieth part of the land is under cultivation, and some appears to have been worn out and abandoned. The sight now and then of a pack of mules laden with produce and the most primitive of wooden wheeled ox-carts, also the absence of all modern agricultural implements, tells of an an antiquated system of agriculture. Indeed, the surface of the ground is so abruptly broken that it is scarcely possible to use the plow, let alone the planter and other modern implements. The hoe is necessarily almost the sole implement of field cultivation. The leading crop of this region is coffee, plantations of which are to be seen as far out as the neighborhood of Retiro, 165 miles from Rio de Janeiro. As a rule the soil on the coffee plantations is kept as clean and free of weeds as are the cornfields of our most careful American farmers. The coffee tree, as it is called, is a bush from six to eight feet high. The stem is an inch to two inches in diameter, and of drab color. The leaves have a shiny, dark-green color. The red soil is just visible between the rows, so that at a distance a plantation has a striped appearance of green and red which is very pretty. After the fruit has been stripped off and much of the foliage with it, the trees have a slightly bluish tinge.

There are some separate coffee plantations which cover several thousand acres, and which, stretching, as they do, over bold, circling undulations, present a beautiful and striking picture. Visible from the railroads are a few, but only a few, handsome residences, connected with plantations.

On this route are several neat looking villages and two or three towns that may number 6,000 inhabitants. Among these, Juiz de Fora is perhaps the prettiest, and is situated on sloping ground with a rocky hill five hundred feet high just behind it. Barbacena, a city with paved streets, built on elevated ground, is reputed as healthful, and has a large and fair hotel. In all these towns not a chimney is visible. The houses are generally one story to two stories in height, the walls of concrete, washed in white, and sometimes blue or green color. The roofs are four-sided and covered with heavy red tiles. The aspect of the villages and towns amid a variety of trees, including, generally, the banana and palm, is, on the whole, cheerful, and the inhabitants, so far as the traveler by railway can judge, are temperate and contented.

The houses, or rather huts, of the poor are built of unburnt bricks, are of a brown color, have wooden window-shutters but no glass windows, and frequently palm-thatched roofs. Generally near the house is a little patch of ground fenced with upright poles of irregular height. Of live stock, mules, goats, and hogs are the kinds most commonly seen. The railway station buildings, though not spacious, are outwardly neat. They are of concrete, a story and a half high, with projecting tiled roofs, walls white, with a strip two feet in width painted red around the base. The station Sitio, at the foot of the Mantiqueira range, has an attractive flower garden attached to it, as is the excellent custom in some of the countries in the north of Europe, and which always make an agreeable impression on the traveler.

The railway on this line is owned and managed by the Government. The employés are poorly paid, wear citizen's clothing, and are unpretentious in their manners. The cars were made in Brazil, the inside finish being of light-colored hard wood, with cane-seated, high-back chairs, in pairs, permanently fixed, and facing each other, on each side of the car, with a passage way in the center. Closets are attached to the cars after the American system. It is the fashion among Brazilian male passengers to wear linen overcoats, and to smoke cigarettes in any car, as a matter of course. There are no separate cars for ladies. In going from Rio passengers get a late breakfast at Barra de Pirahy, and on the return trip dine at the same place. One dollar is charged for a meal, which is very ordinary. Pure and good black coffee, in small cups, with other refreshments, is served at Entre Rios and several other places. On the whole, I think that American visitors to Brazil would find a trip into the interior on this or some other route highly interesting, and such as would leave lasting and agreeable impressions on the mind.

PETROPOLIS.

American visitors arriving at Rio de Janeiro during the warm season, between November and June, and finding the heat too great or yellow fever prevailing, can find a quick and perfectly safe retreat at Petropolis, which is very pleasantly situated in the mountains twenty-four hundred feet above the sea. The Emperor's villa was built at this place about forty years ago, and as improvements have been going on ever since, it has become a most attractive as well as healthful summer resort.

Petropolis lies in the valleys of three clear streams, which have been so improved by the engineer and gardener that they are quite a feature of the place. Their banks are even with the macadamized street or road on either side, but their channels are ten to fifteen feet deep, with sloping and trim, grass-covered sides. They flow gently over smooth, pebbly bottoms, and though usually shallow, sometimes after a heavy rain overflow their banks. They are crossed by a number of bright red foot and other bridges, and shade trees are growing along their sides. Two of these streams coming from opposite directions in the same street unite in the square of Dom Pedro II, and after flowing through the centers of several other streets are joined by another stream of similar character, the whole forming a considerable river, which still runs for some distance in the limits of the town, and then, over numerous foaming rapids, descends the western slope of the mountains to the broad Parahiba. Petropolis includes in its limits several conical hills composed of fertile red soil, mostly covered with a young growth of forest, ever verdant, but somewhat variegated, and in which the dark

green of the gracefully clustered bamboo and the lighter shades of the banana are noticeable. Some of the hill-sides show patches of cultivation and tidy-looking cottages. Fine mountain scenery is visible in various directions. There are several extended and ample streets, a number of which are level, containing many separate, spacious, and tasteful dwellings with the grounds, lawns, shrubbery, and flowers which so much adorn the country home, and which seem to find in the temperature of Petropolis their natural clime. The place with its outskirts affords many miles of pleasant carriage driveway over smooth roads. Its business is confined to one central street, on which is the railway station. The working population is principally German, and good order and quiet prevail. There are several tolerably comfortable hotels, with board at $2.25 a day. As might be supposed, Petropolis has frequent spells of rainy weather, some of which continue fully three days. In almost every month, too, there are some mornings and evenings which are cold enough to render a fire indispensable for comfort; but at present only a few houses are provided with heating accommodations. With good open fire-places in the houses and a sufficiency of dry fuel, the sanitary condition of the place would become greatly improved.

In going to Petropolis one leaves Rio de Janeiro at 4 p. m. in the warm season on a comfortable but slow steamer, which, after an hour's passage towards the upper shore of the bay, lands at a narrow-gauged railway, upon which, after half an hour's run through a level, bush-covered and unsettled country, the foot of the mountains is reached; then at a slow pace the cars are pushed up the mountain's side over a surface well wooded with deciduous trees and exposing many big granite rocks. The first half of the way the soil is a red clay mixed with gravel, but approaching the summit it becomes a brown loam. Three-quarters of an hour are occupied in ascending the mountain and in the short descent on the other side into Petropolis, making about two and a half hours for the whole trip. There is one train a day from Petropolis to Rio, starting at 7 a. m. The fare each way is $3. A few business men make the round trip daily, and state that they find it less fatiguing than the trip between Rio and Tijuca, a mountain resort nearer than Petropolis, which is reached by street-cars and stage, and which abounds with excellent roads and beautiful scenery.

C. C. ANDREWS,
Consul-General.

CONSULATE-GENERAL OF THE UNITED STATES,
Rio de Janeiro, January 24, 1884.

No. 1.—*Table showing the kinds and value of imports at Rio de Janeiro during the two fiscal years* 1882 *and* 1883.

Articles.	Official value, 1881–'82.	Official value, 1882–'83.
Cotton goods	$8,243,947	$8,735,917
Olive oil	226,195	192,380
Codfish	284,390	375,527
Lard	274,570	203,640
Shoes	835,773	809,434
Jerked beef (dry and salted)	1,799,301	1,937,262
Coal	1,717,793	1,880,576
Cereals	857,393	969,331
Beer	208,003	215,549
Tea	113,825	167,183
Lead	143,675	176,643
Copper	432,492	473,328
Flour	1,643,331	1,555,772
Iron and steel	1,565,417	2,492,603
Ice	5,603	7,740
Woolen goods	3,090,918	3,155,138

No. 1.—*Table showing the kinds and value of imports, &c.*—Continued.

Articles.	Official value, 1881–'82.	Official value, 1882–'83.
Linen goods	1,435,506	1,476,858
Crockery	327,601	341,558
Machinery and apparatus	1,434,359	1,429,445
Butter	639,907	569,715
Oil and kerosene	770,850	714,360
Gold and silver	1,948,055	2,703,154
Wrapping paper	188,938	203,116
Perfumery	245,293	212,769
Matches	278,032	236,392
Common salt	207,085	219,815
Silk goods	786,207	1,049,843
Lumber	361,680	307,935
Wines	2,094,388	2,043,926
Different articles	7,684,453	7,403,802
	40,026,521	42,220,711

No. 2.—*Imports and exports at Rio de Janeiro during the* 3 *fiscal years*, 1880, 1881, *and* 1882.

Countries.	Importation, 1880.	Exportation, 1881.	Importation, 1881.	Exportation. 1882.
Argentine Republic	$1,687,599	$770,528	$1,514,754	$561,349
Austria	33,965	43,125	63,237	72,411
Belgium	2,188,291	2,691,711	1,879,312	1,335,821
British Channel	.....	250,060	.....	71,435
Cape of Good Hope	.....	939,923	.....	613,207
Chili	84,298	19,248	273,361	35.379
China	123,272	.....	3,293	.....
Denmark	3,876	83,757	.....	178,751
France	7,524,966	7,357,738	7,179,003	3,885,090
Germany	3,535,416	4,675,785	3,582,979	4,433,283
Gibraltar	.....	331,404	.....	216,252
Great Britain	16,226,956	4,733,007	16,174,826	3,050,418
Italy	312,797	169,742	324,261	44,187
Mediterranean	.....	289,264	.....	184,806
Netherlands	65,506	.....	56,600	.....
Portugal	2,810,998	2,177,452	2,815,639	1,006,693
Russia	32,444	.....	20,869	.....
Spain	88,493	44,926	173,576	3,293
Sweden and Norway	8,203	1,148	104,456	53,341
United States	3,553,915	23,929,061	3,476,632	21,576,719
Uruguay	3,233,663	1,085,014	2,407,881	655,430
Different countries	.....	.....	11,140	1,330
	41,514,654	49,592,895	40,026,521	37,969,198

No. 3.—*Table showing the foreign commerce of Rio de Janeiro during the first half (July–December) of the fiscal year* 1883–'84.

Countries.	Value of imports.	Value of exports.
Argentine Republic	$588,653	$273,981
Austria	50,496	1,291,547
Belgium	744,144	206,295
British Channel	.....	18,421
Cape of Good Hope	.....	205,068
Chili	23,572	3,299
Denmark	.....	38,462
France	3,304,283	1,947,749
Germany	1,786,568	1,970,802
Great Britain	8,342,311	1,543,495
Italy	177,684	270,968
Mediterranean	.....	402,523
Netherlands	22,888	1,300
Paraguay	31	189
Portugal	1,346,477	223,732
Russia	26,725	.....
Spain	66,336	.....
Sweden	95,635	.....
United States	1,679,590	11,230,226
Uruguay	1,496,010	170,055
Total	19,751,503	19,798,112

No. 4.—*The following table shows the value of the foreign commerce of Rio de Janeiro during each of the last ten fiscal years.*

Years.	Exports.	Imports.
1873–'74	$37,408,227	$42,106,985
1874–'75	44,3:9,281	40,625,030
1875–'76	43,039,281	42,007 060
1876–'77	43,445,851	37,577.750
1877–'78	39,704,488	38,797,795
1878–'79	45,606,353	39,142,610
1879–'80	48,198,662	40,859,323
1880–'81	49,592,951	41,514,749
1881–'82	37,968,913	40,026,824
1882–'83	39,340,614	42,126,737
Total	429,852,430	401,785,864

No. 5.—*Statement showing the long course or ocean navigation at the port of Rio de Janeiro for the year ending June* 30, 1882.

ENTERED.

From—	Sailing.			Steamer.		
	Number.	Tonnage.	Crew.	Number.	Tonnage.	Crew.
Africa	4	2,275	55			
Australia						
Austria	4	1,280	10	1	1,126	52
Argentine Republic	98	24,826	935	181	283,345	11,069
Belgium	5	1,354	42	1	1,060	51
British Channel						
Canada	12	2,877	113			
Cape of Good Hope	5	843	48			
Cape Verde	28	11,881	350			
Central America						
Chili	5	1,635	54			
Cuba						
Denmark	2	212	9			
France	11	4,045	104	58	103,669	4,625
Germany	23	9,941	241	40	68,093	2,095
Great Britain	234	178,860	3,596	120	189,848	6,428
Greece						
Gibraltar						
India-China	13	6,559	174			
Italy	10	3,477	112	18	22,389	1,069
Mexico						
Netherlands						
Newfoundland						
Norway						
Oceanica						
Peru				2	2,277	69
Portugal	51	18,145	635			
Russia	6	1,441	50			
Spain	16	3,977	168			
Sweden	15	2,932	111			
United States	142	59,280	1,528	27	37,298	918
Uruguay	50	9,411	511	57	45,827	2,480
	734	345,251	8,846	505	754,932	28,887

). 6.—*Statement showing the nationality of vessels, &c.*—Continued.

CLEARED.

To—	Sailing.			Steamer.		
	Number.	Tonnage.	Crew.	Number.	Tonnage.	Crew.
	8	2,018	72			
	2	403	15	1	1,120	48
ublic	15	3,279	155	87	149,033	6,028
				1	1,266	34
el	4	1,013	51			
	5	848	47			
Hope	24	7,823	194			
	15	7,779	211			
ica						
	47	39,171	783	26	57,830	2,238
	3	649	25			
	4	1,344	51	79	135,336	6,147
	2	1,365	25	66	105,119	3,129
	10	5,239	146	111	179,759	5,204
	29	34,031	608			
	6	2,610	69	12	15,559	743
	1	412	12			
l						
	6	4,882	97			
	1	768	15			
	34	7,899	327			
	11	2,528	107	1	1,100	60
	229	122,233	2,862	76	96,884	2,710
	13	2,312	141	68	57,588	3,184
	469	249,526	6,013	528	800,594	29,525

ment showing the nationality of vessels arriving at and departing from Rio de Janeiro during the year ending June 30, 1882.

ENTERED.

Flag.	Sailing.			Steamer.		
	Number.	Tonnage.	Crew.	Number.	Tonnage.	Crew.
ublic	2	1,376	35			
	4	1,572	47	2	2,252	100
				31	42,209	1,215
	14	3,331	141	32	49,782	2,701
	1	403	13			
	20	3,382	157			
	18	8,154	235	111	205,905	9,584
	59	20,231	574	69	113,165	3,488
	289	176,026	3,798	227	360,078	12,031
	11	4,730	132	31	37,240	1,878
	2	396	13			
	77	26,405	760			
	80	31,425	994			
	1	442	14			
	86	16,920	914			
	32	10,289	321			
	93	57,930	1,114	4	9,008	206
	789	363,512	9,262	537	819,639	31,203

No. 5.—*Statement showing the coure or ocean navigation, &c.*—Continued.

CLEARED.

Flag.	Sailing.			Steamer.		
	Number.	Tonnage.	Crew.	Number.	Tonnage.	Crew.
Argentine Republic	3	1,574	49			
Austria	2	943	25	2	2,246	100
Belgium				34	46,517	1,300
Brazil	3	635	29	62	48,371	2,705
Chili	1	403	13			
Denmark	12	2,481	98			
France	18	8,700	243	112	207,648	9,541
Germany	35	14,637	373	71	113,351	3,363
Great Britain	181	128,140	2,695	213	339,189	10.452
Italy	9	4,185	112	33	39,575	2,026
Netherlands						
Norway	57	20,894	589			
Portugal	34	14,116	456			
Russia	1	442	14			
Spain	28	5,278	301			
Sweden	27	9,237	278			
United States	101	73,472	1,268	4	9,008	206
	512	275,137	6,543	531	805,905	29,683

No. 7.—*Statement showing the exports from Brazil for the year ending June* 30, 1882.

Articles.		Quantities.	Value
Rum	quarts	2,120,931	$120,916
Cotton	pounds	48,215,701	4,154,789
Sugar	do	542,802,407	15,671,739
Hair	do	1,008,590	143,663
Cacao	do	8,273,113	423,550
Coffee	do	538,753,626	45,043,661
Brazil nuts	do	10,967,440	452,360
Hides	do	44,539,224	3,394,463
Diamonds	grams	11,646	370,316
Flour of mandioca	pounds	6,880,750	46,268
Tobacco and its manufactures	do	52,023,059	3,402,289
Rubber	do	15,048,462	5,162,322
Maté tea	do	35,896,318	1,160,054
Wool	do	760,760	65,016
Various products			13,573,810
Total			93,185,216

AMERICAN AND EUROPEAN SHIPPING LAWS.

REPORT BY CONSUL-GENERAL ANDREWS, OF RIO DE JANEIRO.

In submitting a few observations on consular jurisdiction over American seamen, including consular charges for services to shipmasters and the protection, relief, and extra wages of seamen, as derived by the experience of this office, it may be useful in the first place to review briefly the practice of some foreign countries in these regards. The facts I shall state under the latter head will be such as I have obtained by personal inquiry at the consulates of the respective countries at this port.

British laws.—The jurisdiction of British consuls over officers and crews of vessels is defined by instructions under the heading of naval courts, issued by the board of trade, 1878. The practice of exacting extra wages does not obtain in the British system. In case of the discharge of a sea-

man, for whatever cause, only the seaman's arrears of wages are collected. They are paid to the consul, and after the seaman has again contracted service on a vessel, or, according to the common phrase, has "shipped," the wages, after deducting what may have been expended for his support while waiting in port, are paid to him. If he be sent home the wages are remitted to the board of trade and the expense of his passage at the rate of 3 shillings a day, if on a steamer, are deducted therefrom. If the seaman is destitute his expenses are paid by the consul and charged to the board of trade. The latter collects them of the vessel only in case the seaman had suffered an injury in service on board the vessel. Ordinary cases of breaches of discipline and ill usages of seamen are tried by the consul singly or with the assistance of a naval court composed of British masters of vessels, and, where practicable, one or two officers of the navy, all detailed by the consul and comprising, including the consul, five members. The compensation of each shipmaster for serving in such a court is two guineas per day. On conviction of a master or mate for misbehavior he can be fined or sentenced to forfeit his certificate, absolutely or for a temporary period. In the British merchant service masters and mates must pass an examination and receive a certificate of competency from the board of trade before they can be lawfully employed. Seamen convicted of disorderly conduct can be sentenced to imprisonment for as long a period as six months. The expenses of a recent naval court here, which tried two officers and lasted five days, amounted to 392 millreis ($168), and as a part of the punishment imposed on an officer he can be sentenced to pay the expenses of the court. Such courts also inquire as to wrecks of vessels, and can punish officers or seamen who have been guilty of misconduct in regard to the same.

Two naval courts are usually held in the course of every three months. They usually sit two days, and the average expense of holding them is $32 a day. The court expense is paid by the parties convicted, if they have any means. British consuls cannot imprison seamen without the decision of a naval court. The average amount of consular fees paid by each British vessel is about £1 10*s*. The total amount of fees collected by the British consulate here annually is about £750. Under the consular treaty between Great Britain and Brazil of 1874, the consuls of the respective countries are allowed to take charge of the property of their deceased countrymen jointly with the probate court of the country where they reside.

French laws.—No extra wages are collected by French consular officers in any case. If, however, a seaman be left in a foreign port sick the consul can require the master of the vessel to deposit with him a sum of money sufficient to pay his expenses. When the seaman recovers, if he fails to engage on another vessel, the consul can send him home by steamer at a cost of two francs a day if he can work, and seven francs a day if he cannot work, and the passage money is collected at home. In case a seaman receives an injury on a vessel he is entitled to wages up to the time he is able to do duty, which are collected at the home port. The French law prohibits both the flogging and the striking of a seaman. If a master has been guilty of cruelty the consul reports the facts to the commissioner of inscription of the port to which the vessel belongs, but he cannot punish the master even for striking a seaman. But if a mate maltreats a seaman the consul can fine him up to the amount of one month's pay, or, in extreme cases, can discharge him. A deserter receives no relief till he comes and signs a statement that he regrets having deserted, in which case *the consul* can afford him relief till he can

ship or be sent home. A deduction of 3 per cent. is made from the wages of every French seaman for the pension fund—a very old institution—and at sixty years of age the seaman goes on the retired list and becomes entitled to a pension averaging $40 a year, and which is paid to him at his home port. Every French seaman is registered at his home port, which, without change, is regarded as his home port through life.

German laws.—The laws of Germany for the discipline, protection, and relief of seamen do not differ very materially from those of the United States. Where the American consul has to discharge a seaman on account of maltreatment, and collect one month's extra wages for the Government and two months' extra wages for the seaman, the German consul collects two months' extra wages for the seaman if the return voyage is to a European port, or three months' extra wages if the return voyage be to a port out of Europe, and in addition requires the master to deposit money enough to pay the seaman's support till he can be sent home, and also the expense of sending him home. The support of a seaman in such a case, while waiting for passage home, would not be defrayed out of his wages, but would be a separate charge against the master or owner of the vessel—a feature more favorable to the seaman than is the American law. Where a German vessel changes its flag or has not returned to a German port within two or three years the seaman, on making complaint to the consul, may be discharged.

The consul can support a destitute seaman a short time, and if the seaman is unable to engage on another vessel he can be sent home at an expense of from 37 cents to 75 cents a day for the passage. If either of the mates have maltreated a seaman or been guilty of other misconduct, the consul can fine them not exceeding two months' pay, but cannot discharge them. The master, however, can discharge them with the consul's consent. The fine goes to the relief of seamen. The consul can likewise fine a seaman for misbehavior not exceeding one month's pay. If the master is accused of cruelty, the consul takes the testimony and sends it to a competent court at home. For continued disobedience of orders or for crime, the master may discharge a seaman with the consul's consent, but must secure the consulate against expense on his account. Where the agreement provides for a discharge at a foreign port, which is unusual, it may legally occur without extra wages. Where, as sometimes happens, the master connives at a desertion, the consul cannot interfere any further than to inquire into the matter and report the captain's conduct.

The new consular treaty between Brazil and Germany of January, 1882, negotiated at the request of Germany, gives to the consuls of that country certain important powers which American consular officers do not possess. Among these is the right to take charge of and administer upon the intestate estates of their countrymen where the heirs are absent or are minors, to celebrate marriages and to exercise full notarial authority.

Italian Laws.—The laws of Italy for the protection of seamen are similar to those of France, in requiring seamen to be registered at their home port. If a seaman be discharged in a foreign port for sickness contracted in service on the vessel, the master must pay the expense of sending him to the port of embarking. If the sickness or disability was occasioned by bad treatment, the seaman, besides having a right to indemnity, is entitled to wages the full period of the voyage, and to have his passage home paid. On the other hand, if the sickness was caused by *the seaman's own* fault, he gets only his arrears of wages. The consul

is not obliged to furnish relief to a deserter. Italian seamen receive a pension in their old age of from 100 francs to 200 francs a year. Pension offices exist at Naples, Genoa, and Venice.

Swedish and Norwegian Laws.—Neither the Swedish nor Norwegian laws permit the collection of extra wages on the discharge of seamen. If a seaman be left in the hospital the master pays the consul the arrears of wages, and no more; but if, after the seaman comes out of the hospital, expense be incurred for his support, or he has to be sent home, the consul sends the account to the college of commerce, Stockholm, or, if the man be a Norwegian, to the department of the interior, Christiania, which collects the amount of the owner of the vessel. In sending a seaman home the consul gives the master of the vessel taking him a certificate, and the passage money is finally paid by the owner of the vessel from which the seaman was discharged. In an ordinary case of cruel treatment the consul can discharge the seaman, but collects only arrears of wages, but the owner of the vessel has finally to pay whatever needs to be expended for his relief. The consul can discharge officers for misconduct. One per cent. of every seaman's and officer's wages is deducted for a relief fund, from which in their old age seamen and their families can obtain help.

Belgian Laws.—Under the laws of Belgium seamen are registered. A small deduction is made from each seaman's wages for a fund from which he receives a pension when incapacitated. Upon a seaman's discharge in a foreign port extra wages are not collected in any case. If, however, the seaman has been maltreated, the master pays the arrears, and the owner of the vessel becomes liable for any relief the consul has to furnish the seaman, and for his passage home at three francs a day, which is collected at home. A master cannot discharge a seaman in a foreign port except by mutual consent and the permission of the consul. In ordinary cases at this port a destitute Belgian seaman would not be supported by the consul but would receive a paper by which the local Belgian benevolent society would furnish relief and subsequently collect the expense of the owner of the vessel.

Dutch Laws.—Under the laws of the Netherlands, if a seaman is left in a foreign port sick, extra wages are not collected, but all the expenses which the consul incurs on his account must be finally paid by the owner. To this end the consul requires the master to deposit a sufficient sum, which the consul usually in his discretion fixes at not less than the amount of two months' wages. If it is not all required, the balance is returned to the owner of the vessel. In a port lacking a free hospital a deposit of a sum equal to five months' wages might be required. The consul has power to imprison seamen. No discharge can be made without his consent. Under the treaty of September 27, 1878, between Brazil and the Netherlands, consuls of the latter country in Brazil have the power of executors in their own country, in taking charge of estates of their deceased countrymen, calling in, however, local authority to observe their action. They have also the right to celebrate marriages where one of the parties is a Dutch subject and the other belongs to some country other than Brazil.

American Laws.—Having thus glanced at the practice of eight important Europe maritime countries in respect to extra wages and relief to seamen, it remains to notice what the laws of the United States require in similar cases. The most common cases where an American seaman receives extra wages on being discharged in a foreign port are, where his sickness or injury prevents his continuing the voyage, or where he has received *unusual and cruel treatment.* In such cases, in addition to his

arrears of wages, three months' extra wages are collected, of which one month's wages go to the United States for the seamen's relief fund, and the other two months' wages are paid to the seaman. Three months' extra wages are also collected where an American vessel is sold in a foreign port, and her company discharged; and there are a few other cases, equally rare, where three months' wages are collected. In case a consul discharges a seaman with the mutual consent of himself and master, he may, with the consul's approval, waive his claim to two months' extra wages; but in all cases the one month's extra wages for the Government is collected. It may happen that a seaman who has been discharged with two months' extra wages is out of employment for several weeks, and finally has to be sent home. In such case, his passage home, to the amount of $10, as well as all that the consul may have expended for his board or clothes, must be paid out of his own arrears, or two months' wages, as long as his money in the consul's hands holds out. The vessel from which he was discharged having paid his arrears (if any) and the three months' extra wages, is wholly acquitted for any further payment of expenses on his account. It would seem, therefore, that the American practice of collecting extra wages is not much more of a burden than falls, as we have just seen, upon owners of vessels in several European countries, whose consuls can exact guarantees or deposits sufficient to cover all that may be expended in relief and in sending the seaman home.

We have seen that under the British law the expenses for relief of a seaman who has suffered an injury in service on board a vessel are collected of the owner of the vessel; that under the French law the expenses of a sick or disabled seaman and his passage home are paid by the owner of the vessel; that under the German law two months' extra wages and what further may be expended for the seaman's support and passage home are collected in case of discharge for maltreatment; that under the Italian law relief furnished a seaman discharged for sickness and passage home must be paid by the owner of the vessel, and that substantially a similar rule is followed under the laws of Sweden, Norway, Belgium, and the Netherlands. As is well known, the object of the law in requiring the payment of extra wages on the discharge of American seamen in foreign ports is to prevent such discharges habitually, and to cause the shipmasters to return them to the United States. Were it not for such provision very many more seamen than is now the case would be left abroad. The law is to some extent violated. It is my opinion that about one-half the desertions which are reported to this office are simply illegal discharges made by shipmasters. The number of desertions reported to this office in the calendar year ending December 31, 1883, was 145. During said year the number of American seamen arriving at this port was 1,821. No doubt the provision for the collection of three months' extra wages on the discharge of seamen who have received cruel and unusual treatment is an important means for their protection. Some such provision is necessary to prevent officers from misusing their authority over seamen. Nevertheless, the fact that a seaman may derive a pecuniary benefit of two months' extra wages for having been maltreated has seemed in a few cases to have made him by his behavior invite assault. Usually the willful violence done seamen is by one or the other of the mates, who have nothing to lose in the matter. And I am inclined to the opinion that it would be an improvement to adopt into our law substantially the practice which obtains in the British, French, and German laws, of allowing officers of vessels to be fined under consular jurisdiction. It is true that American con-

suls can now discharge masters and mates, but such punishment would be considered extreme, and cannot be resorted to in ordinary cases; besides, in every such case of discharge the owner of the vessel would have to pay one month's wages to the United States. Probably it would promote discipline to give consular officers authority to fine mates for misbehavior to an amount of not exceeding two months of their wages. Likewise I think it would be an improvement in all cases of the discharge of seamen where one month's wages are now collected for the United States to collect only one-third of a month's wages.

The collection of extra wages, though sometimes a hardship, is not, probably, such a burden on shipping as is usually represented. During about a year and a half that I have been in charge of this office, one hundred and twenty-one American vessels have entered at this port, of 83,000 registered tons, whose aggregate gross earnings the round trip have amounted to about a million dollars. The number of seamen including officers, arriving on these vessels, was 2,436, whose aggregate wages must have amounted to at least $240,000. In all this time, and in respect to all these vessels and seamen the sum of $1,621.84 and no more has been collected as extra wages, of which $929.68 were collected for the United States, and $692.16 for seamen. This can hardly strike people in general as being an excessive burden on shipping.

The extra wages collected and number of seamen discharged by this office during the calendar year ending December 31, 1883, were as follows:

Amount of one months' extra wages collected for the United States	$629 68
Amount of two months' extra wages collected for seamen	559 76
	$1,189 44

Number of mates discharged for incapacity	1
Number of mates discharged for misconduct	2
Number of second mates discharged for misconduct	2
Number of seamen discharged on account of sickness	13
Number of seamen discharged on account of maltreatment	4
Total number discharged	22

Undoubtedly the American shipping laws can be ameliorated in some respects, but as they have been in continuous operation for a period of eight years, during which American shipping has at times greatly flourished, it may be assumed that they will not be radically changed without the subject receiving very careful consideration.

In regard to consular fees paid by vessels, I would state that the official fees paid to this office by one hundred American vessels clearing from this port during the calendar year 1883, amounted to $1,828.82, being an average of $18.29 per vessel.

C. C. ANDREWS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Rio de Janeiro, March 14, 1884.

CURAÇAO AND THE DUTCH WEST INDIES.

REPORT BY CONSUL BARNES.

DISCOVERY AND EARLY HISTORY.

Curaçao, one of the islands of the Caribbean Sea longest known to a portion of the commercial world, is yet one of the least known portions of the civilized world. Its name, for two hundred years, at least, has been misspelled and mispronounced, by Americans especially; and even Thackeray, in "Vanity Fair," in a mention of the famous liqueur named from the island, has fallen into the error not so common in Europe as in the United States, of calling it Curaçoa. How this island acquired its present name probably will never be definitely known. The word is a Portuguese one, and signifies heart; but the island is not heart-shaped, and never belonged to Portugal. A number of Jewish families, however, expelled from Portugal and Brazil between 1654 and 1659, found a permanent refuge in the Dutch West Indies, principally in Curaçao; and it may be reasonably inferred that by them, as from their language the present name was supplied. The name given to the island by its discoverer, and borne by it during its Spanish occupation, was "La Isla de los Gigantes," the Island of the Giants.

This island and that of Buen Aire, now called Bonaire, were discovered by Alonzo de Ojeda in 1502. Ojeda, who was of noble family, brave and adventurous, accompanied Columbus upon his second voyage to Española, now Santo Domingo, and upon his third in which Guadelupe, Trinidad, and the mainland were discovered; the latter from the mouth of the Orinoco to the mountains behind which Caracas now stands; and also the island of Marguerita, or Pearl Island, where an abundance of pearls was secured. He afterwards returned to Spain, while Columbus was prosecuting further discoveries, and establishing the rule of Spain in the island called Española; and securing the cooperation of Archbishop Fonseca, a constant enemy of Columbus, who had control of affairs relative to the foreign possessions of the country, fitted out an expedition of discovery, and followed the course of the last cruise of Columbus, supplied by Fonseca with copies of the great discoverer's charts and maps.

Ojeda, following the track of Columbus as far as the vicinity of the present city of La Guaira, Venezuela, continued the course westward to Lake Maracaibo, where he found Indian villages built upon piles over the water—veritable "lake dwellings," such as those the remains of which are found in Switzerland—and which are continued, inhabited, to the present time. He named his discovery Venecia, and the Spanish diminutive Venezuela, or Little Venice, has been adopted as a name for the whole country. From the mouth of the lake his small squadron was directed towards Santo Domingo, and as the islands of the leeward group lay in his course, they were a necessary discovery.

Amerigo Vespucci was a voyager with Ojeda upon this expedition, but had no direct interest therein. He, however, wrote an account of its operations and discoveries, and, unlike the accounts furnished officially by Columbus of his own operations and discoveries, it was made known both in Spain and Italy, of which last country Vespucci, like Columbus, was native; and, probably through the influence of the ma-

Fonseca, the chronicler, rather than the intelligent and perse-
ıg discoverer, had his name conferred upon the western continent.
:ther the enmity of the church dignitary sprang from the fact, pri-
ly, that Columbus was a foreigner who had ingratiated himself at
t, or that the would-be discoverer had, at the council at Salamanca,
rsed the inference from the considerations he there presented, that
world was round, a rank heresy against which some of the clergy
: present quoted the Bible, nearly to the discomfiture of Columbus
his enterprise, cannot be clearly known. In certain times, as in cer-
minds, the existence of truth seems to depend upon its influential
owledgment, or discovery under proper relations to present condi-
:. Galileo, as well as Columbus, found this out, and the lesson con-
ılly reappears, though the round world moves.
eda was made the first governor of the islands discovered by him, and
e adjacent mainland, first named, by the Indians, Coquibacoa; and
ɔlished his government on the island of Curaçao—"La Isla de los
ıntes"—on a bay first named Santa Ana. Failing to enrich himself
coveted gold and pearls, and finding the islands unproductive, for
; of water, the adventurer relinquished his fraudulently obtained
essions, returned to Santo Domingo, and died there in poverty.
ıe first hold which the Dutch obtained upon what are known as the
ard islands, was by the cession of Venezuela, including the islands,
harles V of Spain and the Netherlands, to certain rich merchants
ugsburg. At the close of the revolution against Spain, success-
conducted by the Prince of Orange, Curaçao became, with Bonaire,
ɔa, and Little Curaçao, a possession of the Netherlands, under the
ınion of the Dutch West India Company. The confirmation of this
ge of possession occurred at the peace of Munster, in 1648, one
lred and forty-six years after the discovery of the islands.
is not uninteresting to note in this connection that the celebrated
olomé de Las Casas was for a time a resident of Curaçao; that he
ɔlished a church at Santa Barbara, in the island; and that having
ined from Charles V a grant of 270 leagues of land in Venezuela,
h he did not long retain, he established, in 1520, at Coro, opposite
ıçao, the first monastery of the New World, the remains of which,
its church, are still in a fair state of preservation. Las Casas was
the first priest consecrated in the New World, to celebrate a mass,
510.

GEOGRAPHY AND CLIMATE.

ıraçao, the island containing the capital of the Dutch West Indies,
ıe largest of those islands, its length from northwest to southeast
g 36 miles, its breadth about 8 miles, and its area 164 square miles.
es 46 miles north of Coro, a coast city of Venezuela, in latitude
N. and longitude 69° W. Near it lie Bonaire, Aruba, and Little
açao, and these, with St. Eustatius, Saba, and the south part of St.
tin, among the Windward Islands, compose the Dutch West India
ɜessions. Surinam, or Dutch Guiana, is upon the mainland, and
er a separate colonial government.
ll the Leeward Islands possess, like the West India group generally,
rtile soil; but, unlike the others, they are comparatively barren of
ful vegetable products. The causes of this unproductiveness are want
egular and sufficient rainfall and of streams or wells of fresh water.
h a desirable rainfall, or sufficient supplies for irrigation, the larger
nds of the group would become tropical gardens, like Martinique or
badoes. Now the supply from the clouds, gathered into cisterns, is

sometimes insufficient for household uses, and the brackish contents of the wells are often insufficient for the needs of the few horses, cattle, herds of goats, and few flocks of sheep, so that occasionally there is necessity of considerable diminution of the numbers of these by slaughter. At no time is there sufficient forage produced to keep the animals in good condition, because of the dry climate, and the character of the forage is not such as to make the animals tempting food for the table. There are but two small streams in the island of Curaçao, one issuing from a cave upon a plantation by the seaside, and only sufficient for its use, and one, also small, issuing from the hills in the northwest and unoccupied end of the island. A rainy day is a meteorological phenomenon. The existence of these streams demonstrates a submarine connection with the main land of a character to furnish their supply, and is a suggestion that possibly artesian wells would be successful. This suggestion has only been acted upon to the extent, in one instance, of making a beginning, and abandoning the work at the first obstacle of a broken drill.

FRUITS AND VEGETABLES.

There was primarily considerable braziletto and other dye-wood upon the islands, but nearly all has been exported. In the shallow valleys, where some brackish water percolates the subsoil, several varieties of fruit trees flourish and produce excellent fruit, and it is generally near or among these that the few country seats or residences are to be found, where a few days' sojourn is delightful. In some part of the low ground a dam of masonry is often to be found, confining any moving product of a rainfall, for days if not for weeks, for use in irrigation. Something of gardening is here attempted, and is sometimes fairly successful. The following list embraces all the fruit and garden products of Curaçao, but only the fruits can be depended upon for an annual or steady crop, and that in favorable locations, where they arrive, in many instances, at perfection:

Fruits and vegetables.

Botanic name.	Local name.	English name.
Cucumis citrullus	Patilla	Watermelon.
Cucumis melo	Melon	Muskmelon.
Psydium pyriferum	Guyaba blanca	White guava.
Psydium pomiferum	Guyaba colorada	Red guava.
Anona squamosa	Riñon	Scope apple.
Hibiscus esculentus	Quimbombò	Okro.
Melicocca bijuga	Mamoñ	
Cereas heptagonus	Dato	Cactus.
Solanum lycopersicum	Tomate	Tomato.
Cucurbita maxima	Auyama	Squash.
Cucurbita vulgaris	Calabaza	Calabash.
Citrus limonum	Limon agrio	Lemon.
Citrus limeta	Lima	Lime.
Citrus vulgaris	Naranja cajera	Orange.
Tamarindus indica	Tamarindo	Tamarind.
Achras sapata	Nispero	Sapadilla.
Magnifera indica	Mango	Mango.
Anona muricata	Guanabana	Soursop.
Carica papaya	Lechosa	
Musa sinensis	Cambur pequeño	Banana, small.
Musa sapientum	Cambur criollo	Banana, large.
Musa paradisiaca	Platano	Banana.
Solanum melongenum	Berengena	Egg plant.
Capsicum cydromforme	Pimenton	Pepper plant.
Capsicum crassum	Pimenton pequeño	Pepper plant, small.
Capsicum minimum	Aji	Pepper plant, small.
Momordica marantica	Cundeamor	Balsam apples.
Zea maiz	Maiz	Corn.
Amonum zenziber	Gengibre	Ginger.
Ficus carica	Higo	Fig.
Artocarpus incisa	Fruta de pan	Bread fruit.
Punica granatum	Granada	Pomegranate.

Fruits and vegetables—Continued.

Botanic name.	Local name.	English name.
Theobroma cacao	Cacao	Chocolate.
Cucumis sativus	Pepino	Cucumber.
Saccharum officinale	Caña dulce	Sugar-cane.
Vitis vinifera	Uva parra	Grape.
Coccoloba uvifera	Uva de playa	Grape tree.
Cactus coccinellifera	Tuna	Indian fig.
Amygdalus communis	Almendron	Almond.
Gossypium herbaceum	Algodon	Cotton.
Sapindus coriaria	Dividivi	Dividivi.
Lactuca sativa	Lechuga	Lettuce.
Aloë vulgaris	Aloë	Aloe.
Anacardium occidentale	Merey	Cashew.
Asclepia volubilis	Mari pompoen	
Chrysobalamis icaco	Icaco	

Of these fruits the most abundant are the mango; nispero or sapadilla; mamon, a small fruit of pleasant acid taste; the guanabana or soursop, also pleasant acid, and very palatable; the lechosa, very pulpy and sweet; the tree grape, which grows, as the name indicates, upon a tree, the berries ripening singly and falling one by one; the cashew; and the cactus or Indian fig. The first two are not surpassed for size and excellence anywhere, and are always welcome table fruit. There are a few coco and date palm trees on the plantations also. Of the various banana fruits, the supply is mostly from the mainland, and the demand is large and constant. The large varieties are used extensively as table food, taking the place of other farinaceous food to a considerable extent, especially among the poor; and sliced lengthwise and fried in olive oil or butter, they are a delicacy, while boiled, like potatoes, they are also palatable and nutritious. Tamarinds are also sufficiently plentiful for home use; and put down in layers with sugar, in an earthen jar, the mass becomes homogeneous, and forms a very pleasant and healthful sweetmeat. Of the considerable supply of guavas a delicious jelly is made, which is not unknown to the outer world.

The principal fruit, however, that has made the name of Curaçao known to the world is the orange grown there, *Citrus vulgaris*, there called naranja cajera. Both the tree and fruit are small, and the latter is of a deep-green color. No other tree receives such care and cultivation on the island as this. The fruit itself is only used, with sirup, to make a sweetmeat, or dulce, as it is called. The skins are what are harvested for a constant market. At that stage of development of the fruit when the rind contains a maximum of oil, the fruit is picked and peeled in quarters, and the quarters are dried and pressed, and packed in half barrels for export. The total product of the orchards in orange rind is shipped to Amsterdam, and the price paid varies from 80 cents to $2 per Dutch pound—a tenth more than the pound avoirdupois. By distillation the oil is extracted from the skins or peel, and used to flavor the justly celebrated liqueur "Curaçao." As oil may be extracted from the skins of all kinds of oranges, so they may be used to flavor liquors; and perhaps this accounts, to some extent, for the fact that "Curaçao" is manufactured in Germany and France, and that the supply in the principal cities of the world is never behind the demand. Considerable of the liqueur is shipped from Holland to Curaçao, and so far as I have observed only in bottles of a pint capacity, having necks as long as the bodies, and otherwise characterized as from the port to which the skins are shipped, but never in jugs or amphoras. I doubt that these "pints" are sold in the United States, customarily. I have never seen them so on sale, after inquiry.

Of the remaining vegetable products of the islands little need be said. In some parts the aloe is cultivated, so far as it needs cultivation, and the product, the aloe of commerce, is fairly remunerative, sold in foreign markets. As this plant does not need rains, it is surprising that it is not more extensively cultivated, where both land and labor are cheap. Some dividivi and brazilleto are produced for use in coloring, as cochineal once was; but aniline dyes have made the older ones of commerce unprofitable, in most instances.

LIVE ANIMALS IN CURAÇOA.

Although the markets of the world knew of Curaçao goat-skins, the knowledge is more of skins shipped from that port than from those truly the production of that island, as I shall show later. The animals on the several islands are really few, owing to the scarcity of forage and water, when it is considered how wide a range is afforded by the exceedingly limited area cultivated, leaving fully nineteen-twentieths of the soil unoccupied, and most of it uninclosed. The following table shows the amount of live stock usually kept upon the several islands:

Islands.	Cattle.	Horses.	Donkeys.	Sheep.	Goats.	Total.
Curaçao	600	250	7,000	4,000	30,000	41,850
Bonaire	600	250	5,000	2,000	30,000	37,850
Aruba	300	150	2,000	500	10,000	12,950
Total	1,500	650	14,000	6,500	70,000	92,650

Little Curaçao is unoccupied, except by the few people employed in shipping phosphates to the United States.

The uses to which these animals are put is in some respects different from their uses in the United States. There is no breeding of horses, no mares being kept; and all this stock is imported from the coast, where horses may be purchased for from thirty to a hundred dollars each. They are used only for carriages and under the saddle, and though usually of small size are hardy and serviceable. Cows are seldom used for milk, and they produce little. For beef the cattle are of a poor stock, rendered poorer by want of nutritious and sufficient feed. Such cattle as are butchered would be considered not in good enough condition to work, in the United States, and a fat piece of beef is an unknown article at the markets. Beef, mutton, and goats are cut also in a manner never known among people who know what good eating customarily is. The parts are cut into chunks and pieces of one to three pounds, bones with each piece, and the dissection is performed with an ax. A meat-saw is unknown. There is consequently no steak, roast, or other distinctive parts for the table, and no supposed difference in quality or price. A leg of mutton, however, may be had, unless it proves to be leg of goat; but the discouragement of such a possession is sure, for the suggestive name is delusive, inasmuch as even if the quarter is contributed by a sheep, it is hardly edible in the form of leg of mutton, but must ultimately be changed to a stew, or be neglected at the table, being dry, lank, and tough, and more of a provoker than appeaser of appetite. The same is true of the domestic fowls of the islands; and their eggs are also inferior.

The comparative abundance of donkeys is not surprising to one who knows the common people and the donkey. The animal, like the goat,

will subsist in content where few others can live. He is, with the goat, the steady though humble friend and benefactor of the poor. His utilization upon most farms in the United States, especially where there are children, would be profitable in many ways, and especially on the side of health.

But few sheep are raised upon the islands, and their wool is of an inferior kind, and the supply not abundant. Their milk is used, to some extent, by the lowest class of people. Owing to the coarseness and scarcity of forage, their meat is very inferior.

Goats are the riches of the countryman in tropical climates and thinly-settled countries. They furnish skins, and in favorable localities hams, tallow, and bones for market; the flesh of kids is very good for the table, and the milk of goats is rich, wholesome, pleasant, and makes excellent cheese. As the animal is a rapid breeder, and its cost of keeping next to nothing, it is constantly profitable wherever it can be kept within bounds.

Given a donkey, a few goats, and a little spot where bananas will grow, and in a tropical clime the necessities and even comforts of life are secure to the unexacting native; for bananas yield more than ten times the farinaceous food yielded by any crop grown by farmers in the United States per acre.

SALT AND PHOSPHATE.

But Curaçao and the sister islands have two productive sources greater than all their others, yet unmentioned, and not yet extensively utilized. The opportunities for producing solar salt of the best quality are easy and abundant. Some of this product already finds a market in our country, and is as great a favorite as the Turk's Island salt. It is shipped, some to New York, but mostly to eastern ports. The exportation reaches not far from 20,000 tons per year, for a few years past.

But the present and principal source of income to the islands, and especially to Curaçao, is the deposit of phosphate found thereon. A Philadelphia house has worked the deposit on Little Curaçao profitably for over six years, and shipments thence have been wholly to the United States. From Aruba the shipments have been much larger and are more constant, a portion going to the United States, and considerable to Europe. A royalty of $6 per ton is paid to the Colonial Government. The company having the concession for this enterprise is a local one, with some stock owned in Holland, however; and its receipts are a local benefit to the holders in the islands, as well as to the Government. The greatest deposit of phosphate, however, is upon the island of Curaçao, and it is of extraordinary richness and compactness. At the southeast end of the island there is a headland, not far from 600 feet in height, and steep upon all sides. On the south it fronts upon a little harbor, convenient and safe for shipping. The headland occupies a surface-space of perhaps 2 square miles. It is called Santa Barbara; and near it Las Cases, about twenty years after the discovery of America, founded a church, afterwards destroyed by the Indians because of Spanish greed and cruelty. A church exists there still, and a small pueblo, or village, and the old faith still prevails among the race which Las Cases was influential in having substituted for the Indians as slaves, but who were themselves made free twenty years ago. This headland is the property, and long has been, of a wealthy Dutch family, resident in the island, and until recent years has been supposed to be of as little value, at

least, as any of its other land. But it is a solid mountain of rich phosphate, worth some millions of dollars. Under a concession to an English company work was commenced upon this deposit a few years ago, but subsequently suspended; and during the last year there has been an active renewal. Shipments of the best qualities, of from 40 to 80 per cent. purity, have been made to British markets, and during the last half of 1883, and to the present time, the export under the British flag has been constant. Efforts to establish the sale of the low grades have been made, and an agent of the company was sent to New York to form a connection for shipment and sale in 1883. The results are not likely, at present, to be encouraging. The Colonial Government receives $1 per ton royalty on shipments from this deposit. From the royalties upon Aruba and Curaçao phosphates the receipts, with the more limited ones from other sources, more than pay the expenses of colonial government, leaving a balance to the credit of the home Government, a financial condition previously unknown in the islands. As the Santa Barbara deposit lies upon a bay, with convenient wharfage, a tramway has been established connecting the part of the deposit now worked with the point of shipment; and the laden cars, descending by gravity, have their contents dumped into the holds of the waiting vessels. No more expensive mode of transfer and loading will be required for many years, if ever. The roving discoverer of the island, Ojeda, abandoned it because of its poverty. Now, nearly four hundred years later, the rocks whereon he or his companions trod are better and richer than a mine of the gold he sought, giving their wealth to men, as they do, through transmutations that help establish, and make constantly valuable, conditions and processes beneficent alike to rich and poor.

MINES AND MINING.

The mining of gold has been carried on by a company still existing in the island of Aruba; but the profits do not seem to have been favorable to a continuance. Copper ore also is found on the northern end of Curaçao, but not easily accessible to a port, and not of rich quality so far as prospected. Rich copper is found upon the mainland a little east and about 40 miles in the interior, and the mines are a source of steady profit to their owners, an English company. Possibly the deposit of Curaçao copper will yet be found a paying one by some one not affected with a tropical apathy.

EXPORTS FROM CURACOA.

It is almost impossible to secure a satisfactory statement of the value of exports derived from the foregoing enumerated articles of production, as account of exports is kept in weight only; and a similar difficulty arises in considering imports, as values are reckoned by an arbitrary scale for the sole purpose of reckoning a duty of, at the most, 1¼ per cent. ad valorem. Besides, in relation to exports, by far the larger part consists of goods and products not originating in the islands, but brought to the port of Curaçao from Venezuela and the United States of Colombia, as will be afterwards explained, for shipment abroad. The following table, therefore, is an approximate statement of the quantity of the several articles produced on the principal islands and shipped to foreign markets, for the year ending June 30, 1883, viz:

Islands.	Salt.	Dividivi.	Brazil wool.	Goat-skins.	Aloes.	Wool.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Curaçao	10,000	300	500	15	40	4	10,859
Bonaire*	10,000	200	300	12	30	2	10,544
Aruba	.....	100	200	10	10	.....	320
Total	20,000	600	1,000	37	80	6	21,723

* Report of Agent L. C. Boyé.

The value of these exports, taking the average known market rates for each article, would not aggregate over $300,000. The amount and value of exportations of phosphate has not been ascertained up to date of this report. The shipment of hides, the product of the islands, is insignificant. There have been frequent small shipments of donkeys to the United States, at a rate of an average of $10 per head as the cost of the animals.

A considerable amount of goods, such as goat and deer skins, hides, coffee, wool, cacao, dividivi, dye-woods, &c., is brought to Curaçao, as has been stated, from the mainland, for shipment to foreign markets. The principal business houses upon the island are, many of them, connected with like houses in Venezuela and Colombia, either as joint concerns or by way of agencies on one side or the other. These goods, sent by coasting vessels from the mainland, are known in the ports of destination, however, as productions of Curaçao; and therefore Curaçao coffee has been heard of, but never seen; and all the goat and even deer skins shipped via Curaçao, as well as other classes of productions, become known by the name of the port where they are habitually invoiced for their foreign market. The location of the island, and the necessary relation of the port to the coast, as well as the intimately related interests of island and coast businesses, make this confusion unavoidable in some degree. This relation of the island and port to the mainland will be explained further on. The first and last news of foreign markets is received at Curaçao; and often the determination as to what port abroad is to receive the products of the mainland is made at that port, and on or near the day of shipment by steamer and arrival by coaster. Curaçao has nearly always enjoyed the advantages of a port of exchange between Europe, the United States, and a considerable line of mainland coast. This advantage, upon which her prosperity very much depends, has been partly lost during the last two years or more, by the action of Venezuela in imposing an additional differential duty of 30 per cent. ad valorem upon all importations into that country by way of the West Indies, except, as now modified, on through bills of lading, &c. Thus Curaçao has lost a regular import trade related to the coast—whatever may have been the gain in a manner otherwise usually provided for, and, in the case of an unguarded coast-line, bid for. This extraordinary duty, while it is an annoyance to legitimate and regular trade, in its effects, is of little avail presumably in closing out goods, and incurs loss of revenue to Venezuela. The effect upon trade with the United States is shown in a decrease of the consular fees at this consulate since the beginning of the operation of the exclusive law, by nearly or quite one-half, with a still downward tendency. In 1878, when Venezuela closed the port of Maracaibo to foreign commerce, the fees also decreased to less than $1,000 per year. From these statements it can be inferred what the damage is that is being inflicted upon our commerce by the operation *of the law* referred to.

TARIFF RATES OF CURAÇAO, ETC.

The following are the fixed prices of the articles enumerated, upon which a duty on importation of 1¼ per cent. ad valorem is levied at ports of the Dutch West Indies. The exceptions to the rate governing these articles is in the case of coffee, coarse wool, cacao, dividivi, goat-skins, hides, quina bark, dye-woods of all kinds, and lignum-vitæ, which pay only 0.5 per cent. ad valorem:

Aloes, per kilogram	$0 1
Anchovies, dozen bottles or small pots	7 2
Apples:	
Fresh, per barrel of 70 kilograms	2 0
Dried, per barrel of 50 kilograms	10 0
Beans and peas, all kinds:	
Per hectoliter	480
Per 2½ hectoliters	12 0
Per bag of 64 liters	2 4
Beef, dried, per 100 kilograms	8 0
Biscuit:	
Ship's, per barrel of 40 kilograms	4 0
Crackers, per barrel of 40 kilograms	4 8
Crackers, per half barrel of 20 kilograms	2 4
Small box or tin	2 0
Braziletto, per 1,000 kilograms	16 0
Butter, per kilogram	4
Cement, per hectoliter	40
Cheese:	
Edammer, per box of 2 dozen	10 00
Edammer, per box of 1 dozen	5 00
Stolk or cumin, each	1 20
American and other kinds, each	2 00
Cocoa, per kilogram	20
Codfish, salted:	
Per hogshead of 250 kilograms	24 00
Per tierce of 125 kilograms	12 00
Per case of 50 kilograms	4 00
Per case of 37½ kilograms	3 00
Per case of 25 kilograms	2 0
Per case of 12½ kilograms	1 2
Casave cakes, per package of 50	2 0
Cochineal, per kilogram	1 6
Cordovan, per dozen	3 2
Cumin seed:	
Per bag of 100 kilograms	10 0
Demijohn of 10 kilograms	1
Cocoanuts, per 100	1 6
Demijohns, each	
Donkeys, each	4
Firewood, per cubic meter	2
Flour:	
Wheat, per barrel of 100 kilograms	6
Wheat, per ½ barrel of 50 kilograms	3
Rye, per barrel of 100 kilograms	4
Maize, per hogshead of 400 kilograms	12
Maize, per 100 kilograms	3
Fish, salted and dried, per 100 pieces	4
Garlic, per 100 strings, or packages, 100 kilograms	12
Goat meat and mutton, dried, each	
Herrings:	
Per barrel of 100 kilograms	4
Per tub or bottle of 2 kilograms	
Smoked, per case	
Hides, dried, each	1
Horses, each	120

Horses from United States of Colombia (Indian coast), Amba, or Bonaire	$20 00
Horned animals (cattle), per head	20 00
Indigo, per kilogram	1 20
Lard, per kilogram	28
Lime, per hectoliter	32
Maize, per bag of 64 liters	1 60
Mackerel:	
Per barrel of 100 kilograms	8 00
Per half barrel of 50 kilograms	4 00
Per tub of 10 kilograms	2 00
Mules, each	40 00
Mules, from Indian coast, each	20 00
Oats, millet, or barley:	
Per demijohn of 15 liters	80
Per hectoliter	4 00
Orange peel, per 100 kilograms	30 00
Onions:	
Per crate of 250 kilograms	10 00
Per basket of 20 kilograms	80
Per barrel of 50 kilograms	2 00
Per 100 strings of 80 kilograms	3 20
Potatoes:	
Sweet, per barrel of 80 kilograms	1 20
Per barrel of 80 kilograms	2 00
Per basket of 1 hectoliter	2 00
Per basket of one-half hectoliter, or less	80
Radars, per barrel of 50 kilograms	5 00
Rats, each	8 00
Rock-wood, per 1,000 kilograms	8 00
Sidwood, per 1,000 kilograms	8 00
Sheep and goats, each	1 20
Stockfish, per 100 pieces	4 00
Sugar:	
Per hogshead of 400 kilograms	24 00
Per half hogshead of 200 kilograms	12 00
Per barrel of 100 kilograms	6 00
Per demijohn of 9 to 11 liters	80
Starch:	
Per barrel of 100 kilograms	4 80
Per barrel of 30 kilograms	1 60
Per bag or coffer of 50 kilograms	2 40
Sugar, loaf and crushed, per kilogram	16
White granulated, per kilogram	12
Brown granulated, per kilogram	06
Papilon (long), per dozen	1 20
Panelas (square), per dozen	40
Skins:	
Goat, uncured, per dozen	8 00
Sheep, uncured, per dozen	1 20
Tortels, each	2 40
Turtle shells, per kilogram	4 00
Tobacco:	
Ambalema and Mompox, seroon or package	10 00
Santo Domingo, per seroon or package	10 00
Porto Rico, per seroon or package	4 80
Cuba, per seroon or package	14 00
Vinegar:	
Per barrel of 216 liters	10 00
Per barrel of 108 liters	5 00
Per demijohn of 18 to 21 liters	80
Per demijohn of 9 to 11 liters	40
Wax:	
Yellow or unbleached, per kilogram	40
White or bleached, per kilogram	70
Wool:	
Washed, per kilogram	24
Unwashed, per kilogram	12

In the payment of duties usually only the paper colonial money is received, although recently an arrangement has been contemplated by the Government by which doubloons may be received at a certain rate. Although the standard of currency is the Dutch guilder of 40 cents, American money, there is no Dutch or Netherland money in the islands, and the paper currency of the colony finds no circulation outside. This paper is at a premium of about four per cent. over the various kinds of money in circulation, which consist of some American gold, less of our silver, Spanish and Mexican and other doubloons, Mexican dollars, South American sols and pesos of various nationality, some Venezuelan bolivares and fuertes, French francs, and Prussian, Spanish, Italian, and Swiss silver, and some English gold. The Government, as a rule, does not take any of this money, and fixes no value upon it; and as the silver forms almost the entire circulation in business, with sometimes American gold and doubloons, the regulation of the comparative values of the different kinds of money, and of the current value of each kind, is undertaken by the principal merchants, by consultation and public meetings from time to time. American gold is usually at a high premium in business, ranging from seven per cent. upwards, and exchange is often as high as twelve, and even fifteen per cent. on New York. In many ways unknown to communities having their own metal money, money is made upon money in Curaçao. Sometimes the change in the valuation of certain coin, as the sol of Peru or the peso of Chili, by the agreements of the merchants, equals a stock operation of twenty-five years ago on Wall street. Some of the changes made have equaled 11 per cent. upon one class of coin, and concurrent movements in preferring that class before a rise, or rejecting it before a fall, with perhaps a change in value to a slight extent of another class finally, have augmented the profits. The premiums, fixed by the merchants, of American gold, of 5, 6, and 7 per cent. at different times, upon the $20, $10, $5, and $2.50 pieces, rejecting the $3 and $1 gold pieces, and silver, the pieces without premium being offered at the consulate in payment of fees, have been unsettled by the refusal to take any money depreciated by any means below the full value of American money at the place where taken. As a result, all American gold now passes at a like value, and silver is rejected until it reaches an equal value, it having appreciated already about four per cent.

EXPORTS TO THE UNITED STATES.

As has been noted, the exports from Curaçao consist of products of the Dutch West Indian islands and of a portion of the mainland, Venezuela and the United States of Colombia. The value of the exported products of the island, aside from phosphates, to the United States has been stated at $300,000, which is less than the sum of the declared exports given below. Productions of the coast enter into the statement, as coffee, and much of the hides and skins, no coffee being produced upon the islands. Probably four-fifths of the export trade of the islands is with the United States and the largest portion of the import trade.

The following table exhibits the facts as to the exports to the United States during the last three-quarters of the year ending September 30, 1883:

Statement showing the value of declared exports from the consular district of Curaçoa, West Indies, to the United States, during the last three quarters of the year 1883.

CURAÇAO.

Quarter ending March 31, 1883.

Hides, skins, wool, &c	$89,206 31
Dyewoods	3,442 28
Coffee	8,724 56
Salt	1,750 00
Guano	8,800 00
Miscellaneous	17,332 00
	129,255 15
Charges	2,107 43
Total	131,362 58

Quarter ending June 30, 1883.

Hides, skins, and wool, &c	$119,769 98
Dyewoods, &c	20,511 69
Coffee	18,538 10
Salt	840 00
Miscellaneous	2,698 39
	162,348 16
Charges	1,810 81
Total	164,158 97

BONAIRE AGENCY.

Quarter ending March 31, 1883.

Salt	$3,461 20

Quarter ending June 30, 1883.

Salt, 10,600 barrels	$,188 46

Quarter ending September 30, 1883.

Hides and skins	$82,650 72
Dyewoods, &c	13,112 17
Coffee	22,292 06
Salt (Curaçao and Bonaire)	5,766 80
Guano	10,400 00
Miscellaneous	7,329 12
Cost	141,550 88
Charges	929 48
Total	142,480 36

PAST AND PRESENT IMPORTANCE OF CURAÇAO.

It may easily be seen that the past and present importance of Curaçao (the other islands depending upon this) has not lain, and does not now lie, in the abundance or importance of its productions. Why it has an importance unusual to so small, barren a spot of earth, and why that importance is likely to continue, and perhaps increase, may be shown by a few special facts and considerations, wholly independent of temporary interests and conditions.

From Puerto Cabello, in Venezuela, to near or at the mouth of the river Magdalena, in the *United States* of Colombia, a distance of

nearly 6° of latitude in a straight line, but of over 1,000 miles of coast line, there is no harbor or good roadstead where vessels large enough for transmarine voyages can enter, with the exception of the harbor of Maracaibo, on the lake of that name, from which vessels drawing over 10 feet of water are excluded, however, by the bar at the mouth of the lake. Curaçao lies 45 miles out from this line of harborless coast, opposite Venezuela and the city of Coro, formerly her capital, a place as populous as any of her coast cities. Curaçao has one of the best and safest harbors of the world, conveniently fronting the coast, and is practically a free-trade city and country, the receipts from imports merely paying the expenses of guarding a legitimate trade. The lines of steamers from and to Liverpool, Hamburg, and New York that touch at La Guayra, Puerto Cabello, and then Cartagena and Colon in their courses, omit the 1,000 miles of coast between Puerto Cabello and Cartagena, or at best Sabanilla, but call at the port of Curaçao instead, as for the mainland. This substitutes the latter port for a mainland port, and gives it in this respect the importance nature has conferred, but has denied to the neighboring coast. The region of Curaçao is singularly free from storms and hurricanes, the port charges are moderate, and the prices of ship's supplies are also very low. The certainty of deserting seamen being returned is also in its favor with captains of both steam and sail vessels, as is also the certainty of laborers, and also the low prices of labor. The following table shows the movements at the port during a year:

Statement of the number, tonnage, and nationality of vessels entered and cleared each at the port of Curaçao during the year ending September 30, 1883.

Flag.	Number.	Tonnage.
United States	37	21,905
British	106	81,285
Colombian	27	1,757
Danish	7	836
Dutch	512	12,517
French	15	15,336
German	65	72,191
Haytien	9	828
Italian	3	766
Spanish	9	666
Venezuelan	327	9,875
Total	1,117	217,963

Of these vessels, those from the United States, Great Britain and Germany were principally steamers. The Dutch and Venezuelan vesses were small coasters, of from 10 to 80 tons. There is now an excellent line of new steamers, under the American flag, run from New York via Curaçao to Puerto Cabello and La Guayra, and returning by the same route; and another American steamer, of the same line, built with flat bottom to enable it to pass the bar at the mouth of Lake Maracaibo, connects the line at Curaçao with Maracaibo, Venezuela. These steamers are new, commodious, and are fortunate in having able and excellent commanders and officers generally, and in being owned and operated by a company that provides abundantly for the comfort and convenience of passengers—Messrs. Boulton, Bliss & Dallett, New York. Although built for freighting purposes principally, as the travel to South America is inconsiderable compared with that to Europe, these steamers have ample accommodations for forty first-class passengers each. An accident is unknown to the line. There are also sailing vessels, under the British

flag, plying regularly between New York and Curaçao, and irregular trips are occasionally made by American sailing vessels, freighted with ice, lumber, &c. An American, Capt. L. B. Smith, has established a prosperous business in the last-named articles, and furnishes all the lines of steamers, &c., at Curaçao; and he alone, of Americans in late years, has demonstrated, by residence and personal attention to business, that our own business men, as well as merchants of German or English birth, may establish remunerative and friendly relations in the Dutch West Indies and Venezuela, as Mr. Royal Phelps, of New York, had done years ago.

IMPORTANCE OF CURAÇAO.

The distance of Curaçao from New York is 1,860 geographical miles, by way of the Mona Passage; the distance from New Orleans is about 1,500, and from Key West less than 1,200, to this island. The island, as has been said, lies within 50 miles of the Venezuelan coast, in sight of it on a clear day, and opposite one of its principal coast cities. It also lies but little east of the Gulf of Venezuela, into which enter the waters of Lake Maracaibo, which lake is 120 miles in length, covers 2,100 square miles, and receives a hundred and twenty rivers as tributaries, besides four hundred smaller streams. This lake and the rivers Zulia and Catatumbo form a natural highway to the sea for a considerable portion of the United States of Colombia, and the lake and its rivers, draining 12,000 square miles of rich country, yet to become populous, and already offering much more to commerce than is taken, lead out into the Caribbean Sea, near where the splendid port of Curaçao, of all ports for a distance of a thousand miles, receives the regular visits of ocean steamers of four or five lines.

STATISTICS OF SOUTHERN TRADE.

The reasons because of which we have made movements towards a commercial foothold in the islands of St. Thomas and San Domingo, and an influence in Central America by treaty with the United States of Colombia, so far as they were justifiable to us, still exist, and are perhaps stronger than ever before. So far as they extend towards increase and protection of trade, they gather strength with each year.

The nearest trade points between South America and Europe are nearly or quite twice as far apart as are New York and the nearest trade points in South America—those in Venezuela and Colombia. Relative to the principal trade points of the West Indies and Central America and Mexico, the difference in favor of principal ports in the United States is very much greater. The supply of the Pacific coast states of South America, from the United States, rather than from Europe, might be made much the most advantageous to these coast states and to us. With all our activity in production, and our seeking for foreign markets, however, we buy much from and sell little to countries lying south and nearest of all the world to us; and the little sold represents our least skilled industries, while the much purchased does little to promote those industries. For instance, we sell provisions, lumber, petroleum, &c., and buy principally coffee and hides and skins. At the same time, these southern nations, unskilled in manufactures, purchase all kinds of fine and coarse goods and household articles almost entirely from Europe. We endeavor to push our products of skilled labor upon the countries which produce already the surplus which supplies our southern continent, Mexico and the West Indies, from a

double distance, at what ought to be a greater cost of freight. We also, with the balance of trade greatly against us in those southern countries furnish through that paid-up annual balance the money that pays for those purchases of European goods.

The following carefully prepared statement will show clearly how three leading nations usually stand as to this interesting region:

Statement showing the values of the imports, exports, and total trade of Mexico, Central and South America, and the West Indies; the value of their trade with Great Britain and France, and with the United States; the balance in favor of Great Britain and France and against the United States; and the excess in the value of their trade over that of their trade with the United States for the year 1879 *(the latest complete figures available).*

Total imports	$396,041,000
Total exports	498,192,000
Total trade	894,233,000
Imports from Great Britain and France	168,071,000
Exports to Great Britain and France	160,189,000
Total trade with Great Britain and France	328,260,000
Balance in favor of Great Britain and France	7,892,000
Imports from the United States	64,770,000
Exports to the United States	150,010,000
Total trade with the United States	214,780,000
Balance against the United States	85,240,000
Excess of trade with Great Britain and France over trade with the United States	113,480,000

Or nearly 40 per cent. of their trade with the former countries, and a little over 24 per cent. with the latter country.

During the same year our total trade with Europe was $942,000,000, and the balance in our favor in that trade was $472,000,000. Such a trade needs no efforts for its increase, and probably never can be increased by any present system of pushing. But our field for the easiest trade and the best ultimate profits needs cultivation and all the encouragement the Government can properly give to make the cultivation successful and its fruits permanent.

The character and location of the island and port of Curaçao are important to us in this view. The excellent land-locked harbor, with good anchorage; the easily improved facilities for repairing vessels; the healthfulness of the climate; the abundance and cheapness of labor; the infrequency of hurricanes; the proximity to a coast harborless for large vessels; the convenience to the point of a ship-canal in progress, in which we have the most interest; the convenience of a coaling and supply station in that portion of the world; the friendliness and high character of the principal people, all recommend Curaçao to the attention of our Government and people in preference to any other island on or in the Caribbean Sea.

THE CITY OF CURAÇAO.

This is the only city on the island, or on any of the group, and contains over twelve thousand residents, the island having, all told, about 25,000; of whom there are less than 4,000 white, Dutch, Jews, and some Spanish Americans, the balance being negroes and mixed breeds.

The city lies along the sea and bay sides, but little elevated above the water, and presents a very pleasant scene from the sea and the heights back of it. The oldest part, that founded by the early Spaniards, was formely called Santa Ana, and was, like all the early cities founded by the Spaniards, a walled town. The walls have disappeared, and the place is now defended by two forts of stone at the entrance of the harbor, called Fort Amsterdam and Water Fort, and one on a height of about 200 feet back of, and finely commanding, the town and harbor entrance, called Fort Nassau. By the entrance channel to the bay, which is very deep, and not over an eighth of a mile wide, and by a side lagoon, the city is divided into three parts, that formerly called Santa Ana being now known by the official name of Willemstad, but popularly as Punda; that on the north of the lagoon and farthest from the sea, Scharlò; and that on the west side of the entrance channel, Otra Banda—literally, "the other side." The extreme eastern end of the city, also, extending from the old Santa Ana, is popularly known as Pietermaai. There are two broad streets, one on each side of the "river" or channel, and very many narrow ones, and all are well paved, and cleaned daily by the labor of prisoners for misdemeanors.

The city is built almost entirely of stone, the material being found near, and of a quality easily worked, and hardening by exposure, like some of our sandstones. This stone is a rather coarse coralline limestone, and much greenstone is also found, as well as lava, which latter covers considerable of the surface of the hills surrounding the inner bay to a depth of 10 feet in places, the flows seeming to have been on all sides from the harbor or bay as a center. The limestone is of a light grayish white in color, and gives to the houses a remarkably neat and fresh appearance. The style of architecture is usually such as prevails in Holland, the buildings being from two to three stories high, with Dutch gables and dormer windows. Very many in the business portion of the city are spacious and airy, and the upper portions are used as residences, while the ground floors are devoted to trade. The detached private residences are usually built in a style that is a compromise between the Dutch and Spanish, and best suited to the climate, and have grounds inclosed by high palings or by high walls of masonry, where shrubs are cultivated in prepared soil and beds elevated above the rocky surface, confined by borders of masonry. The private dwellings are in many instances richly furnished, but seldom with articles of American manufacture. Until the establishment of an American line of steamers to this port, the direction of travel of wealthy Curaçaons, as well as Venezuelans, was by steamers to Europe. Now there is something of a change, and the elegant finish of the steamers of the Red D Line in American woods, and the no less artistic furnishing with articles of American make, have served the purpose of a great "object lesson" to many; so that now one of the largest and finest dwellings in Curaçao has its woodwork and entire furniture from New York, and is justly the pride of its enterprising owner.

Hotel accommodations and life in the city, as on the mainland, are not what a traveler expects usually to find; but they are such as at present suit the largest class of wayfarers. For recreation there are several clubs, with billiard and reading rooms, and a very good theater is in occasional use, both by traveling companies and excellent home talent.

There is a church of the Reformed Dutch denomination in the city, to which most of the officials and Dutch residents belong, where services are held once each Sunday. *There are two* synagogues of the Jewish faith,

one called "orthodox" and the other "reformed." There is a cathedral of the Roman Catholic Church, and one other church where frequent services are held; and several chapels of that faith in the island; for the lower classes of the people, as well as some of the wealthy Spanish Americans, give a matter-of-course adherence to the Catholic religion, in all that part of the world once under Spanish rule. An archbishop resides at Curaçao, who has ecclesiastical control in the Dutch West Indies. There is a fine convent also, near the city, well kept up, and the nuns are celebrated for their needlework and other products of their taste.

Schools are numerous and well kept up, both of a public and private or ecclesiastical character. These are excellent in all instances, and perhaps there is no equal population in any city that can show more knowledge in good education and accomplishments than Curaçao can exhibit. The knowledge of languages is especially remarkable, Dutch, English, French, and Spanish being generally spoken, and well, by the people above the common level. In many instances the young men are educated in the famous European schools, both German and English, and some are sent to schools in New York for education in law and medicine.

There are hospitals also on the island, under charge of the Government, and to which non-residents are admitted at a moderate cost. The health of the city is cared for by a board of health, and there is a physician provided for the poor. As the island has little rain, and is therefore dry, with its nearly tropical warmth tempered by the trade winds, it is perhaps the most healthy spot in the West Indies, and is seldom visited and never scourged by yellow fever. As the enslaved Indians of early times admitted that while taking away their liberties the Spaniards gave them religion, so now the gift of healthful conditions is at the expense of that prosperity that may be derived from culture of the soil, for if the rains that would make the island a paradise of bloom and production were prevalent, the present healthfulness would undoubtedly decrease in proportion.

The roads about Curaçao, as well as the streets of the city, are excellent and smooth at all times, and drives around the bay and to country residences in the morning or evening are always pleasant. From many points of view fine outlooks are had upon the sea, where sails are almost always in sight, and frequently the long dark cloud of a steamer's smoke. The business knowledge, enterprise, perseverance, and general fairness of the long line of merchants of Curaçao, with her own few but striking and well-used advantages, have made her at all times of importance in the history of the commerce, and often of the politics and government, of the adjacent continent. With the completion of a Central American canal, at whatever point, this importance will be greatly augmented, there can be no doubt, and her citizens will know how to use it, if we do not.

INTERESTING FACTS.

In the edge of that part of Curaçao now called Pietermaai are the ruins of a mansion built of stone prior to 1650, and which was called "The Governor's Mansion." The builder of this house was then governor of the Dutch possessions in the West Indies and South America, and while residing in the island had the misfortune to lose one of his legs, which now lies buried in an unknown spot, probably near the ruin. The remainder of the governor's body is buried in New York, where with the peculiarity of its lost member it has entered into Knick-

erbocker history. Peter Stuyvesant, "Peter the Testy," was governor in Curaçao when he was transferred to become the last governor of New Amsterdam.

In 1800 the French frigate La Vengeance, after her defeat by the United States frigate Constitution, under Captain Truxtun, becoming separated from the latter in a gale, escaped into the harbor of Curaçao in a shattered condition and with a hundred and sixty men killed and wounded. She was so disabled as to be towed in by her small boats. The admittance of this vessel to asylum was the cause of great annoyance, expense, and misfortune to the Government and people.

During the late war in the United States the Confederate cruiser Alabama lay some days in port at Curaçao, and secured coal, &c. Later, the Virginius visited the port, and after securing a pilot for a specified purpose, compelled him to accompany the vessel to Cuba, he being an old American captain, familiar with the Cuban coast. In fact, so well known is the excellence and the convenience of the port, that in all operations of a hostile nature against either the mainland or the West India Islands, from the times of the buccaneers to the present, it has been sought as a shelter or a base of operations or supplies. As the part of the great world to which it is intimately related geographically increases in development and consequent importance, the influence which may and will be exercised through this island will be more generally recognized as great out of proportion to its apparent significance among the lesser Caribbean Islands.

ALMONT BARNES,
Consul.

UNITED STATES CONSULATE,
Curaçao, West Indies, January, 1884.

AMERICAN BASE BURNERS AND COOKING STOVES WANTED IN GERMANY.

REPORT BY CONSUL KIEFER, OF STETTIN.

GERMAN HEATING APPARATUS.

I would respectfully submit herewith a few brief remarks which impressed themselves upon my mind during the last winter.

From the beginning of my stay in this city I took a special interest in the different kinds of heating and cooking stoves in use. To compare them with those manufactured in our own country, I found for the first-named purpose (heating) everywhere and exclusively large clay or porcelain structures, one in each room—in a large room even two—which being filled every morning afresh are allowed to burn freely for about one hour, are then shut up and begin to produce, after two or three hours' time, a temperature of about 60° to 64° Fah. in the room. This holds out for about eight hours, and then cools down to 54–55°; all this with an outside temperature which during the whole winter scarcely ever falls lower than 22° Fah., and mostly ranges from 40 to 50°.

The past winter, however, was an extraordinary one for this climate, and the "oldest inhabitant" could not remember one like it, the average temperature from November to March being about 14° Fah., often for days down to zero and below. The people under these circumstances shivered in their rooms, although fires were kindled two or three times a day in those huge structures.

AMERICAN BASE BURNERS.

I spoke often and enthusiastically of our base burners, but the people will not believe without seeing. The only way to convince the German people of the superiority of any one article, and to introduce it into the market, is to show it to them in working order. Dealers will not take the risk to import foreign and unknown articles as long as they are not sure of selling them at a good profit, which they do with similar and even inferior goods.

Now, I have not the least doubt but that by showing the advantagas of our base burners, a good and remunerative trade could be established in this part of Germany within a few years. In order to accomplish this most desirable end, I myself would be willing to set up one stove in my residence, or in my office, invite the people through the newspapers to look at it when going, and explain its working. I am familiar with the construction of stoves, having used base burners of different patterns since 1870, and having seen nearly every kind manufactured, in the houses of my customers and patients. So soon as the demand for them shows itself, of which I have no doubt, the dealers here will be glad to get agencies, in which case I could give good and reliable names to our manufacturers.

I may mention here as a matter of importance, that anthracite coal can be got from the colliery of the city of Osnabrück, in the province of Hanover.

GERMAN COOKING APPARATUS.

Cooking stoves, in my opinion, could easily be introduced here, as those in use (called "machines"), made of clay, need a great deal of fuel, cannot be moved from one place to another, and give scarcely any heat at all to the kitchen or the room where they are in use. Besides, they need three different fires for boiling, roasting, and ironing. The poorer class of people, unable to heat more than one stove at a time, suffer from cold, even when standing before the "machine."

AMERICAN GAS-BURNING STOVES.

I know perfectly well that our gas-burning stoves have been already introduced into Germany. I have seen them myself in Frankfort, Wurzburg, and Berlin; but comparatively only a few are in use even there, and none are to be found here. I know, also, that in Carlsruhe and Nuremberg imitations are manufactured, the Nuremberg manufacturers even going into court because of an alleged infringement of their patent by Americans. I cannot, however, help thinking that the American stove would maintain the field and come out victorious if only the import and introduction would be carried on with honesty, energy, and perseverance. It cannot be expected that such an enterprise will pay within the first year, particularly if the exporter does not do anything more than send half a dozen of his stoves to some house in Germany, waiting for the results.

The German dealer puts them in some corner where nobody sees them. If inquired after, he probably looks over his store, and it is good luck if he finds what is wanted, because he takes neither an interest in the article, nor has he, as a general rule, even the space and room to show the goods he deals in. It will take a long time and earnest labor to build up such a trade.

HOW TO INTRODUCE WARES INTO GERMANY.

Our manufacturers, in my opinion, should establish agencies in this country, where different kinds of articles suitable to the needs and tastes of the people could be stored; a kind of wholesale commission house. Every article sent must prove to be of the quality it is claimed to be, and come out as true and genuine as it is represented. Energetic, well-educated young men, capable of speaking the German language fluently, should be employed to canvass the country, advertise in the leading papers, explain the advantages of different articles to the people, and so on. I am fully convinced that only by such means can we hope to enlarge our trade in this country to anything like the proportions to which it can be increased in new articles, and the indifference, and, in many cases, even opposition, existing against American goods triumphantly overcome.

H. KIEFER,
Consul.

UNITED STATES CONSULATE,
Stettin, March 8, 1884.

AMERICAN TRADE WITH THE FIJI ISLANDS.

REPORT BY CONSUL A. VAN CAMP, OF LEVUKA.

The United States, I am happy to say, furnishes a large proportion of these; but, it being my impression that we can do even better than we are doing, I propose to make a few remarks upon some of the principal articles we suppliy, and the nature of the demand therefor.

1. *Timber.*—For several years Fiji has been an open market for American timber, notably for the pine of Oregon and the redwood of California. Our sole rival in this article is New Zealand; but the timber from the latter does not find the same favor with builders as that from the former. The American timber, from its peculiar properties, is not so subject to damage by insects. Within the last few months several large cargoes of timber have arrived here from the United States, and have been distributed between Levuka and Suva. The building firm of Messrs. Wilson & Murcline has received the bulk of the consignments. Timber is the chief material of all houses, stores, and other edifices erected for the use of the white inhabitants and for roofing, while corrugated iron is generally used for stores; the redwood shingles are preferred for dwellings, as they do not attract and retain the rays of the sun as does the iron. As an extensive boat and shipbuilding trade is done throughout the group, it must be apparent that the local consumption under these heads is large. Besides, there is the furniture and "trade box" manufactures, which enter largely into the general consumption. For these latter branches there is no better wood than the California red, its color, lightness, and durability finding it favor. Boards of ¾ and 1 inch thickness, planed on both sides, would supply a want of the trade.

2. *Tinned meats, fish, fruit, &c.*—Of these the United States supplies principally fruit—that from California being much in favor; although Australia commands the market for meats, it is very far behind the United States in respect to the preservation of the product of her gardens and orchards, and as we have the supremacy in this, with due care we can maintain it. In these tropical lands our cool, luscious fruit is

highly appreciated, and it is present almost invariably in table desserts. There is, however, a drawback; instead of the local merchants getting their supplies direct from our manufacturers, they obtain them through Australian agents, which increases the cost. Only a few cents added to the price of an article often largely affects the demand. The consumption of all edibles supplied in tins is very large throughout the group. Preserved meats and salmon find great favor among the native population, and all traders keep a stock of both to supply native wants.

3. *Biscuits.*—Biscuits are largely supplied from Australia, principally from Melbourne, packed in square tins, containing between 40 and 50 pounds each. The plain biscuit has three denominations, namely, "captains," made both round and square, being about eight to the pound; "pilots," square, about ten to the pound; and "cabin," square, thin, and about twelve to the pound. Both whites and natives are large consumers of these kinds; they constitute the "bread" in all localities beyond the reach of the baker shops. To many of the Fijians nowadays bread, in either soft or hard form, is a necessary of life. Fancy biscuits in small tin packages form an important item of the imports.

4. *Kerosene.*—In this article we may suppose the United States has no competitor in this part of the world; and therefore I may pronounce the Fiji group, in proportion to its extent, one of our best customers. It is always a heavy item in the miscellaneous cargoes of vessels to these ports, and it is the fuel of the lamps burnt in every house and coasting craft, without exception. On an average every native family burns a quart of this oil weekly, and its name is familiar to every child. "Kerosini" has become a Fijian word. Most of the shipments come to us via Australia.

5. *Hardware.*—Axes, hatchets, saws, hammers, chisels, augers, adzes, &c., are largely supplied from American factories. The American ax is the only kind a Fijian will use. He likes it for its lightness, keenness, and temper; and so familiar is he with its specialties of workmanship, that it would be no easy task to impose a spurious one upon him. He, however, will not, if he can help it, go beyond two dollars for a full-sized ax. Fifteen and eighteen-inch bladed knives, strongly and ornamentally riveted to wooden handles, are a great article of trade. Every adult male Fijian is the possessor of one such knife; it is indispensable to him in weeding, clearing, and gathering his crops of cocoanuts, bread-fruit, bananas, pines, &c.

The articles enumerated above are absolute necessaries on all plantations; and in nearly every house a few useful tools are kept. Lending, losing, and climatic damage are circumstances which help create a brisk demand for all hardware goods. Galvanized buckets and tubs, anchors and chains, ship and boat fittings, steel screws and wire nails, all kitchen utensils and housekeepers' conveniences, are goods that enter largely into the local trade.

6. *Wrought-iron nails.*—I have an opinion that our cut wrought-iron nails, if they were introduced here, would, for many kinds of work, be preferred to the wire nails, but, for a time, they would have a prejudice to encounter; as they would be apt to be classed with worthless cast nails which got introduced here, and which all carpenters execrated unsparingly.

7. *Scales and weighing-machines.*—Our manufacturers having made these essential articles a special study, have combined simplicity with strength—qualities which have found appreciators among the merchants, traders, planters, and manufacturers of this group. All produce here

is bought and sold by weight, so that weighing machinery is everywhere a requisite.

8. *American clocks.*—Our manufacturers in supplying the Fijian and South Sea markets with timekeepers have the manufacturers of Germany to contend with; the latter, in most instances, sending their consignments direct to local agents. However, the best goods will command the market in the long run. The clock and watch trade might be much better here than it is. Were there established in Levuka an industrious, conscientious artisan, possessing a sound knowledge of both branches, improvement would soon be perceptible. People have put their clocks and watches into incompetent hands, till both the article and the pretending repairer have excited unmitigated disgust. There is a good opening here for the kind of man I refer to above.

9. *Sewing-machines.*—Perhaps there is not a white man's house in Fiji without one of these domestic adjuncts to comfort, respectability, and tidiness. The domestic seamstresses, however, are remarkably prompt to discard an obsolete article for one of modern design. Besides, sewing-machines do not last forever any more than the garments which they help to make. Articles of our manufacture are in high favor, in which position it must be our constant endeavor to keep them.

10. *Cooking-stores.*—In these goods we beat the world; cheapness, simplicity, and effectiveness secures us the market here as elsewhere. In a tropical climate the stove that does us our cooking efficiently and with the least labor wins our affections. The perfectly ventilated American kerosene stove is making its way into all our bachelor households; it is a boon beyond price.

11. *Knock-down furniture.*—This, with our constantly increasing white population, and the house-furnishing taste acquired by Fijians of rank and means, should become an item of large and profitable export from the United States to Fiji. Those engaged in the trade should look out for customers among the local merchants. It appears to me that the resident Chinese cabinet-makers have the trade nearly in their own hands. "John," however, for the most part, only seeks to please the eye; durable and well-seasoned goods from our factories might furnish him with leisure to enjoy himself.

12. *Pianos and organs.*—These instruments have long been the resources of our resident families as means of evening entertainment. Few makers of any note, whether English, French, German, or American, are not represented by their workmanship here. Unfortunately for the possessors of much of it, and, perhaps, equally unfortunate for the suppliers, it has not withstood for any time the shrinking, warping effects of climate. Disabled, broken-down, pianos and harmoniums are truly legion in these islands. The maker who will send us instruments capable of defying our climate may command the market, which is an ever expanding one. Singing and playing enters into the education of all the white and many of the half-caste of the youth of Fiji; and there are here skillful teachers, and instrumentalists of high merit. I regret to have to state that there is in the Mechanics' Institute of Levuka a costly piano from one of our makers, and which is an importation of only three years past, that does us no credit. It is a pity that an American house should forward to a trial market goods calculated rather to close it than open it. In the English church at Levuka there is a new organ by Mason & Hamlin, which is giving complete satisfaction. Mason & Hamlin, consequently, may expect future orders from Fiji.

13. *Drugs and patent medicines.*—Few articles that come under this head are better known among the Fijians than Perry Davis' Pain Killer.

In the mind of the Fijian it is indelibly stamped as a panacea—good for the toothache, a cramp in the stomach, or a fit of despondency. Its sale of late has, however, been materially curtailed by its being subjected to a special, and virtually prohibitory, import duty. Fiji's receiver-general, or treasurer, who is also the Government chief medical officer, has declared it to contain a large proportion of opium, and hence it no longer slides into the country side by side with a treacle and flour pill, or a bottled mixture of salts and jalap, subject only to a 10 per cent. ad valorem duty. This is a matter which I recommend to the attention of the patentee.

14. *Duties on imports.*—The 10 per cent. ad valorem duties prevail on all soft and many other kinds of goods. Spirits, wines, ales, and other liquids, including oils, pay by the gallon. Cheese, butter, bacon, lard, &c., by the pound. All jewelry is subject to 20 per cent. ad valorem. At present in Fiji there are only two ports of entry and departure for vessels coming from, or bound to, foreign ports. Any infringement of the law in this respect would bring swift and sharp punishment on the offender, if he kept not clear of the agents of justice. The Fiji customs officers are perfect models of dilligence in the discharge of their duties.

15. *Licenses.*—In Fiji all trades are licensed. A widow cannot sell pins and lollipops unless she holds a license, for which she pays $25 per annum. Wholesale and retail traders, and solicitors, respectively, pay $70 per annum, while by a proposed amendment of the licensing ordinance the latter will, henceforth, have to pay double. And dentists and architects, who have heretofore escaped attention, will be required to hand over their annual contribution. Commission agents pay $50, and auctioneers and banking companies, respectively, $150 per annum. An hotel-keeper's license costs $200 annually—and this without any distinction as to the amount or nature of the business done. All master-mechanics and contractors must hold licenses; and only he who can prove that he is a journeyman, or a servant, escapes. Thus do nearly all classes of the white community contribute to the revenue, not only through all the imported goods they help to consume, but directly by means of the taxes on their industry. But, of course, where there are heavy claims on a public revenue, and a young and small colony like that of Fiji has to pay its governor $25,000 annually, and meet the expenses pertaining to a system of Government, in the ordering of which virtually it is allowed to take no part, there is much occasion for a heavy taxation.

The subject of my next letter will be the nature of the goods and products which find a steady market in this group.

A. VAN CAMP,
Consul.

UNITED STATES CONSULATE,
Levuka, December 31, 1883.

AMERICAN TRADE AT CAPE HAYTIEN.

REPORT BY CONSUL GOUTIER, OF CAPE HAYTIEN.

I have the honor to inclose the following report for quarter ending December 31, 1883:

It will be seen from accompanying statements that six vessels, of 5,768.60 tons, with cargoes amounting to $110,838.15, arrived from the

United States, while twenty-three vessels arrived in ballast. The exportations to the United States, amounting to $205,831.98, were carried in twenty-five vessels, of 12,286.50 tons. It is gratifying to note that out of thirty vessels arriving during the quarter twenty-six of them, or 87 per cent., carried the American flag.

For some years past printed calicoes for dresses and drills for pantaloons and other dry goods of American manufacture have been encroaching on this market, which for more than half a century was monopolized by France, Great Britain and Germany. These dry goods are favorably received, and quite an extensive trade in them could be carried on with Hayti, if our manufacturers would take the same pains to satisfy as their European competitors. This they will be obliged to do later when looms will teem in the cotton States, and the South will manufacture the greater portion of the raw material raised there instead of shipping it to the North and abroad. The quantity of these printed calicoes received here is included in the cotton goods, of which 154,445 yards have been imported from the United States during the quarter ending December 31, 1883, as in many cases no specification of them is made.

STANISLAS GOUTIER,
Consul.

UNITED STATES CONSULATE,
Cape Haytien, March 5, 1884.

IMPORTS FROM THE UNITED STATES.

Statement showing the description and value of the exports from the United States to Cape Haytien during the quarter ending December 31, 1883.

Axes	dozen..	20
Apples	barrels..	12
Alewives:		
Barrels		411
Half barrels		35
Beer in half bottles	dozen..	110
Boards	feet..	25,000
Butter	pounds..	9,500
Biscuits	do...	2,232
Chairs	dozen..	16
Tallow candles	pounds..	1,080
Cotton goods	yards..	154,445
Codfish	pounds..	254,000
Cheese	do...	1,815
Denims	yards..	28,750
Blue drilling	do...	99,563
Drugs and medicines	cases..	29
Duck	yards..	1,575
Garden engine		1
Flour:		
Barrels		2,725
Half barrels		545
Quarter barrels		510
Furniture	sets..	10
Drinking glasses	dozen..	369
Hams	pounds..	1,763
Smoked herrings	boxes..	2,475
Hay	bales..	6
Iron railing		1
Lard	pounds..	31,850
Mackerel	barrels..	262
Matches	gross..	74
Nails	kegs..	12

Kerosene oil	gallons..
Oats	barrels..
Oakum	bales..
Onions	barrels..
Potatoes	do...
Pork:	
Barrels	
Half barrels	
Paint	kegs..
Pails	dozen..
Black pepper	pounds..
Rope	coils..
Rice	pounds..
Raisins:	
Quarter boxes	
Soap	boxes..
White sugar	pounds..
Shoes	dozen..
Tobacco	pounds..
Trunks	nests..
The whole amounting to	$11
Specie imported	

IMPORTS FROM THE UNITED STATES.

Statement showing the description, value, and quantity of the exports from the Uni to Cape Haytien, during the year ending December 21, 1883.

Alewives:	
Barrels	
Half barrels	
Apples	barrels..
Axes	dozen..
Beans	barrels..
Beets	do....
Ginger beer (in half bottles)	dozen..
Salt beef:	
Barrels	
Half barrels	
Bran	barrels..
Blacking	gross..
Large bellows	
Biscuits	pounds..
Boards	feet..
Butter	pounds..
Cart	
Tallow candles	pounds..
Carriage	
Cement	barrels..
Lamp chimneys	dozen..
Cheese	pounds..
Chairs	dozen..
Rocking chairs	do....
Codfish	pounds..
Cotton goods	yards..
Denims	do....
Blue drilling	do....
Drugs and medicines	cases..
Duck	yards..
Furniture	sets..
Flour:	
Barrels	
Half barrels	
Quarter barrels	
Drinking-glasses	dozen..
Hats	do....
Hay	bales..
Hatchets	dozen..
Hams	pounds..
Smoked herrings	boxes..

Iron (in bars)	pounds..	4,795
Iron railing		1
Iron axle-trees		12
Lard	pounds..	199,010
Mackerel:		
Barrels		1,957
Half barrels		163
Matches	gross..	3,069
Preserved meats	dozen cans..	5
Sewing-machines	dozen..	15
Nails	kegs..	171
Onions	barrels..	87
Oakum	bales..	25
Oats	barrels..	70
Jars	dozen..	17½
Kerosene oil	gallons..	44,870
Linseed oil	do....	73
Paint	kegs..	272
Potatoes	barrels..	68
Empty pipes		9
Pork:		
Barrels		5,445
Half barrels		190
Pails	dozen..	269
Black pepper	pounds..	3,811
Raisins	quarter boxes..	275
Rope	coils..	21
Rice	pounds..	90,130
Sales (large)		3
Sentling	feet..	67,674
Slates		26,333
Shingles		140,000
Shoes	dozen..	288
Lemon:		
Half barrels		1
Quarter barrels		2
Soap	boxes..	68,660
Sugar (white)	pounds..	90,082
Tar	barrels..	16
Rye	cases..	15
Tobacco	pounds..	17,145
Tongues:		
Barrels		2
Half barrels		3
Quarter barrels		2
Trunks	nests..	91
Tubs	do....	46
Spirits of turpentine	gallons..	25
Water (Florida)	dozen..	200
Wheels (cart)	pairs..	72
Zinc (in sheets)	pounds..	1,845
The whole amounting to		$563,592 44

NAVIGATION BETWEEN CAPE HAYTIEN AND THE UNITED STATES.

Statement showing the number, name, tonnage, and nationality of vessels arriving from and departing to the United States, with the description and value of the imports to and exports from Cape Haytien during the quarter ending December 31, 1883.

IMPORTATION.

No.	Name.	Tonnage.	Nationality.	Where from.	Description.	Specie.	Value in gold.
....	Steamer George W. Clyde	.....	American	New York	In port	.....	.....
1	Brig Rapid Transit	233	Haytian	Boston	Provisions and lumber	.....	$15,171 00
1	Steamer Santo Domingo	1,226.56	American	New York	Provisions	.....	11,592 22
....	Brig Goodwin	.....	....do	St. Thomas	In ballast	.....	.....
...	Bark Hancock	.....	....do	....do	....do	.....	.....
....	Steamer Alps	.....	British	Jamaica	....do	.....	.....
....	Brig Mary Fink	.....	American	Barbadoes	....do	.....	.....
....	Brig Americus	.....	....do	Porto Rico	....do	.....	.....
....	Schooner Georgia	.....	....do	St. Thomas	....do	.....	.....
....	Bark Aberdeen	.....	....do	Porto Rico	....do	.....	.....
....	Brig Minnie Abbe	.....	....do	Guadeloupe	....do	.....	.....
1	Steamer George W. Clyde	1,470.24	....do	New York	Provisions	.....	15,040 80
....	Brig Sullivan	.....	....do	Trinidad	In ballast	.....	.....
....	Brig William Mason	.....	....do	Martinique	....do	.....	.....
....	Schooner C. H. Macomber	.....	....do	St. Vincent	....do	.....	.....
....	Brig Hyperion	.....	....do	Martinique	....do	.....	.....
....	Brig Abbe Clifford	.....	....do	St. Thomas	....do	.....	.....
1	Schooner Elise and Lucie	142	Haytian	New York	Provisions and lumber	.....	16,964 00
1	Steamer Santo Domingo	1,226.56	American	....do	Provisions	.....	15,092 19
....	Brig M. C. Haskill	.....	....do	Barbadoes	In ballast	.....	.....
....	Schooner William H. Jones	.....	....do	Martinique	....do	.....	.....
....	Bark Endeavor	.....	....do	Porto Rico	....do	.....	.....
....	Schooner Alice Tarlton	.....	....do	St. Thomas	....do	.....	.....
....	Schooner Maggie Abbott	.....	....do	Gonaives	....do	.....	.....
1	Steamer George W Clyde	1,470.24	....do	New York	Provisions	$30,638	36,977 94
....	Brig C. C. Robinson	.....	....do	Santiago de Cuba	In ballast	.....	.....
....	Brig Three Cheers	.....	British	St. Thomas	....do	.....	.....
....	Schooner Willie A. McKay	.....	American	St. Mark	....do	.....	.....
....	Brig Shannon	.....	....do	Martinique	....do	.....	.....
....	Schooner George Wallace	.....	....do	Guadeloupe	....do	.....	.....
6	Total	5,768.60	.....	.....	.....	30,638	110,838 15

No.	Name.	Tonnage.	Nationality.	Where bound.	Logwood.	Coffee.	Cocoa.	Honey.	Mahogany.	Peppers.	Goat-skins.	Bees-wax.	Tortoise-shell.	Value in gold.
					Lbs.	*Bags. Lbs.*	*Bags. Lbs.*	*Gals.*	*Pieces.*	*Bbls.*	*Lbs.*	*Lbs.*	*Lbs.*	
1	Steamer George W. Clyde	1,470.24	American	New York	405,150	365=52,562				40	1,697	123		$9,787 14
1	Brig Rapid Transit	233.00	Haytian	Boston	523,000									4,979 95
1	Steamer Santo Domingo	1,226.56	American	New York	278,500	348= 52,381	57= 6,992	60		26	797			9,079 49
1	Brig Goodwin	332.70	do	Delaware Breakwater	758,000									7,296 68
1	Bark Hancock	391.54	do	Boston	877,400									7,562 44
1	Steamer Alps	985.00	British	Boston via Kingston	1,396,850									11,055 80
1	Brig Mary Fink	405.70	American	Boston	814,550									7,945 66
1	Brig Americus	383.83	do	Delaware Breakwater	800,500									7,512 16
1	Schooner Georgia	333.19	do	do	820,550									7,891 59
1	Bark Aberdeen	305.72	do	do	663,000						850			6,271 33
1	Brig Minnie Abbe	326.75	do	New York	668,950									6,424 60
1	Steamer George W. Clyde	1,470.24	do	do	510,700	1,370=187,836	130=16,218		15	107	1,372		120	28,912 62
1	Brig Sullivan	327.58	do	Boston	804,625									7,153 27
1	Brig William Mason	284.33	do	Delaware Breakwater	596,050									5,347 03
1	Schooner C. H. Macomber	114.20	do	Boston	373,000									3,321 08
1	Brig Hyperion	291.04	do	do	590,550									5,396 23
1	Brig Abbe Clifford	428.74	do	do	872,900									7,879 76
1	Schooner Elise and Lucie	142.00	Haytian	New York	251,350									2,084 18
1	Steamer Santo Domingo	1,226.56	American	do	398,000	1,310=179,425	116=14,367				420			27,332 69
1	Brig M. C. Haskill	333.69	do	Philadelphia	717,000									6,459 82
1	Schooner William H. Jones	283.07	do	do	640,000									5,723 68
1	Bark Endeavor	400.71	do	Boston	732,150									7,743 94
1	Schooner Alice Tarlton	243.66	do	do	571,900									5,402 25
....	Schooner Maggie Abbott		do	In port										
...	Steamer George W. Clyde		do	do										
....	Brig C. C. Robinson		do	do										
1	Brig Three Cheers	185.30	British	Delaware Breakwater	427,500									4,455 64
1	Schooner Willie A. McKay	161.15	American	New York	315,000									2,812 95
....	Brig Shannon		do	In port										
....	Schooner George Wallace		do	do										
25	Total	12,286.50			15,807,175	3,393=472,204	303=37,577	60	15	173	5,136	123	120	205,831 98

INCREASED IMPORT TAX IN MEXICO.

REPORT BY MINISTER MORGAN, OF MEXICO.

Referring you to my telegram of this date, I transmit herewith a translation of the decree of the President of Mexico of the 12th instant, imposing an additional tax of 5 per cent. on all articles imported into the republic from and after the 15th May next.

P. H. MORGAN,
Minister Resident.

LEGATION OF THE UNITED STATES,
Mexico, February 18, 1884.

DECREE.

[Translation from the Diario Oficial.]

MEXICO, *February* 14, 1884.

Department of Hacienda.—First section.

The President of the republic has seen proper to address to me the following decree:

Manuel Gonzalez, President of the United States of Mexico, to the inhabitants thereof:

Know ye, that exercising the authority conferred upon the Executive by the law of the 26th of May of the year last past, and in view of the fact that the case provided for in the two sections of article 2 of said law has arisen, I have seen fit to issue the following decree:

ARTICLE 1. The duty on imports upon all goods imported into the republic through the maritime and frontier custom-houses of the same shall be increased 5 per cent.

ART. 2. The period of three months' notice which is required to be given by the second section of article 2 of the said law of 26th May shall commence to run and shall count from the date of this decree to the 15th day of next May, at which date the 5 per cent. additional duties upon imports shall commence to be levied.

Therefore, I order (the same) to be printed, published, circulated, and executed.

This done in the palace of the Executive Palace of the Union in Mexico on the 12th of February, 1884.

MANUEL GONZALEZ.

To the Secretary of State for Hacienda and Public Credit.

SUGAR-BEET CULTURE IN EUROPE.

REPORT BY CONSUL WILSON, OF BRUSSELS.

The fact that the manufacture of beet sugar on this continent has, within the last few years, grown into such magnitude and become such an element of national wealth, whilst in the United States it has made such little progress, notwithstanding the comparative cheapness of our land and the peculiar adaptation of much of our soil and climate to the growth of the beet, would seem to imply that our cultivators of this plant have either not yet fully appreciated all the conditions necessary to make its culture a profitable crop, or that for some reason our refiners have failed to render it such for them.

vever this may be, I here propose to give, in as brief a form as ıle, some practical observations on this subject derived from relia- thorities, which may, perhaps, awaken amongst both our refiners ɡriculturists an increased interest in what is regarded on this con- as one of the most profitable of soil crops.

AREA CULTIVATED.

re are now no less than 875,000 hectares or about 2,000,000 acres d devoted to the culture of this beet in France, Germany, Aus- ungary, Russia-Poland, Belgium, and Holland, distributed amongst countries in the following proportions, viz: In France, 220,000 es; in Germany, 210,000; in Austria-Hungary 200,000; in Rus- land, 180,000; in Belgium and Holland, 65,000 hectares. For ı and Holland I regret that I cannot furnish further statistics re- to their sugar product; but in France there are now 500 refiner- oducing annually about 385,000 tons of sugar; in Germany 341, cing 575,000 tons; in Austria-Hungary 245, with a product of 0 tons; and in Belgium 156, turning out annually about 100,000 Thus it will be seen that in the four above-named countries the l product of this sugar amounts to an aggregate of 1,485,000 tons.

CULTIVATION IN THE SEVERAL COUNTRIES.

many, undoubtedly, now stands at the head of the beet-sugar man- ring nations of this continent, for certainly in no other country of e has this manufacture developed with such rapidity or into such al proportions; and this is generally attributed not so much to the adaptation of German soil to the cultivation of the beet as to the in which this is done and the enlightened fiscal régime applied to gar refineries. In Germany and Austria, and, I believe, in Rus- o, the excise duty is assessed upon the beet before it enters the y, leaving the manufacturer free to convert this material into ver form he may find the most profitable; whilst in France, Bel- and Holland it is assessed upon the sugar produced in the refiner- ascertain which Government officials are appointed to watch over stage of manufacture and to see that nothing goes out of these ishments by night or by day, either in the form of crystallized or any other substance containing saccharine matter, without first submitted to inspection and the imposition of duty. The re- of this country are not only subjected to the surveillance of these l agents, but are also required to report to the Government the e day of each year when they intend to commence refining opera- in order that the inspectors may be on hand; and in case they are ady at that time they are compelled to pay fifteen francs to the nment for every twenty-four hours after that date until they begin ions.

GOVERNMENT TAXATION AND ENCOURAGEMENT.

mode of assessing the excise duty in Germany gives to the sugar- s of that country another very great advantage over the refiners nce and Belgium. The German refiner, instead of having to t to the annoying interference of Government inspectors in deter- ɡ the duty to be paid according to the grade of his product, is r required by law to pay an amount equal to 25 francs per ton on

all the beets entering his refinery, and when once their weight is determined and the duty paid, the Government has no other claim upon him. But this is not all the superior advantages this mode of assessing the excise duty confers upon him. When it first became a law German beets contained about 6 per cent. of saccharine matter, and the excise duty of 25 francs per ton was based upon that fact; but under the present improved mode of selection and cultivation, they contain from 10 to 12 per cent., all of which excess may be fairly regarded as clear gain to him. There is still another feature of this manufacture in Germany that accrues to the benefit of both cultivator and refiner well worthy of consideration. A very considerable number of the refineries in that country are now organized and incorporated as co-operative companies. In other words, the large and small cultivators of the beet in certain districts have built refineries upon the following joint-stock plan, viz: After determining the probable cost of their contemplated refineries, shares of stock are issued, payable in installments, to cover the expense incurred, and each stockholder obligates himself to furnish to the refinery an annual quantity of beets, proportioned to the stock he has in the concern, and as every stockholder, whether large or small, is dependent upon the product of the refinery for quite a portion of the profits of his cultivation, it may be readily imagined that he leaves nothing undone in the way of cultivation to bring his beet crop up to the highest possible standard of both quantity and quality. Indeed, there can be but little doubt that this class of sugar-manufacturing associations has done more to perfect the beet culture in Germany than any one other element whatever; and that the Germans have found this a profitable industry I need only here mention that seventeen new refineries have recently been built, thirteen are in process of construction, and projects are now on foot for the building of no less than fifty more, which will necessitate an increased beet culture of more than 50,000 hectares. In a recent report made to the German Reichstag, Herr Richter, a deputy from Hagen, made the statement that in 1881–'82 no less than 100,000 tons of beet sugar had been exported from the country, thus escaping 25,500,000 francs excise duty that otherwise would have gone into the public treasury. The remission of this duty to the German refiner on all the sugar he exports is of vastly more importance to him than is a similar remission to the French and Belgian refiner, seeing that it is assessed upon his beets, calculated to contain 6 per cent. of sugar, whilst they really contain from 10 to 12, the value of which difference becomes to him an export premium paid him by the Government. Indeed, it is thought here in Belgium, and in France also, that if to the present number of refineries the new ones contemplated in Germany should be added, within two years the product of German sugar will amount to 1,000,000 tons, and that of this quantity there will be about 600,000 tons available for foreign exportation, which, with their premium-paying excise duty and their superior mode of cultivation, will enable them to largely monopolize the sugar markets of the continent and seriously cripple this industry both in France and Belgium, unless these Governments come to its aid in some one form or another.

MODE OF CULTIVATION.

The cultivation of the beet throughout Europe, but especially in Germany, is being constantly modified with a view to better results, both as to the gross yield of roots and the quantity of saccharine matter they contain. The climatic conditions and chemical qualities of the soil

where it is proposed to plant are carefully and scientifically studied, and after these have been found satisfactory the preparation of the soil, class of fertilizers, mode of planting, and the variety of seed selected receive an equal amount of consideration.

On the subject of climatic influence it is an established fact that no locality where the length and heat of the growing season are such as to force the plant into a seed-bearing stem the first year is fit for the cultivation of the beet for sugar, seeing that the rapid development of its organic structure into this degree of maturity always involves a marked decrease of saccharine matter. It would seem from the reports of the most scientific and competent observers, that during the early growing season of April and May this plant requires but a moderate degree of both heat and moisture; but in June and July, when it is maturing its foliage and form, a much greater degree of both are necessary; and, finally, that during August and September, the period for the elaboration of its saccharine matter, it requires uniformly dry heat. If much humidity prevails at this season the plant will continue to develop its foliage and become deficient in saccharine qualities and consequently more or less of a failure.

The quality of the soil and the mode of its preparation are also elements of the first consideration in this culture. It is now, I believe, generally admitted that neither a sandy nor a hard clay soil destitute of calcareous matter, nor yet one too highly charged with light porous organic matter, is favorable to saccharine development in this plant. In short, without entering into a detailed description of the various soils recommended, it may be said that the soil best adapted to the production of wheat and rye in a due proportion of a strong straw and perfect grain will suit this beet well.

But however favorable the climate, or naturally well adapted the soil may be, if a due regard is not had to its proper preparation before planting, a good and paying crop cannot reasonably be expected. It is a chemical fact that (all other conditions being equal), for the fullest development of saccharine matter in this plant, it must possess a good tap-root and a smooth, well-proportioned form; hence it matters not how rich in proper chemical constituents the soil may be, if it has not been plowed to a sufficient depth to allow the tender tap-root to prolong itself downward it will be forced aside and the plant will at once throw out additional roots to attach it to its base. The downward growth being thus obstructed, the body of the root is unduly pressed above the surface of the ground, and this, with the straggling lateral roots it is forced to throw out, destroys its symmetry of form and invariably results in diminishing the elaboration of sugar in the plant according to its weight. On all successful beet-growing farms on this continent the soil is turned and opened to the depth of at least 20 inches, and this is always done, when possible, in the autumn preceding the spring planting.

On the subject of the best variety of beet to be selected for planting, it may suffice to say that whilst the sugar-producing qualities of almost all (and there are many) have been improved within the last few years, it is an admitted fact that there is no one variety especially superior to the others in its adaptation to the various soils and climatic conditions of all countries, and that the safest method to pursue in this matter is for each cultivator to grow, from selected plants of known sugar-producing quality, his own seed, and thus secure an acclimated variety suited to his locality. A vast number of methods have also been invented for determining the germinal quality of the seed intended for planting by

the cultivator, but a knowledge of the maturity of the seed-bearing plants furnishing the seed and a proper regard to the form and relative weight of the seed will, in most cases, be sufficient to guard the farmer against any errors in this direction.

FERTILIZERS FOR BEET CULTURE.

The subject of fertilizers for soil devoted to this culture has also claimed much attention from the beet-growers of this continent, and is, I think, now well understood. Formerly it was thought by farmers that a plant so charged with sugar was necessarily an exhaustive crop to the soil, but chemistry coming to their aid demonstrated to them that as sugar was composed of carbon, hydrogen, and oxygen—all derived from the air and water—it was one of the least exhaustive crops they could plant, and such, indeed, is the fact; for if, after the extraction of the sugar, the pulp, with the neck and leaves of the plant, were restored to the soil upon which they grew, there would only remain to be restored to it, of its original constituents, but a small amount of phosphates, lime, potash, and soda, in order to bring it up to its original fertility.

But the question with intelligent beet-growers is not now how they may best guard against an exhaustion of their soil, but how they may secure from it the greatest weight of roots containing the highest possible degree of sugar; and here again chemistry has come to their aid. It has been satisfactorily established that to produce 50,000 kilograms of beet roots, yielding 12 per cent. of sugar, upon a hectare of land, the soil must contain at least 60 kilograms of phosphoric acid, 100 kilograms of lime, 90 kilograms of magnesia, 200 kilograms of potash, and 120 of azotic or nitrogenous matter; but as all soils contain more or less of these agents, this quantity need not necessarily be added to many of them to secure the above-named crop.

However, as a basis of calculation to serve as a guide to the cultivator, it is assumed that to any given natural soil that will produce 15,000 kilograms of beets, yielding 10 per cent. of sugar, two-thirds of the above amount of fertilizers should be added to secure a yield of 50,000 kilograms of beets of 12 per cent. sugar constituents. Hence, to produce a crop of this beet yielding 6,000 kilograms of sugar per hectare, on a soil previously more or less exhausted, the following formula of fertilizers has been advised, viz: Hyperphosphates of lime, 400 kilograms; sulphate of lime, 200 kilograms; chloride of potash, 250 kilograms; nitrate of soda, 350 kilograms; sulphate of ammonia, 150 kilograms. This is what is here called intensive fertilization, and is now resorted to in some modified form, according to the original quality of the soil or the rotation of crops grown upon it, in all the large beet-growing districts on this continent.

Stable manure, which generally contains a large proportion of nitrogen, is rarely used as a fertilizer for a crop of beets immediately succeeding its application, in consequence of its stimulating too much the growth of organic matter in the plants at the expense of saccharine qualities; but when wheat or rye is sown in the autumn, in a soil thus fertilized, a good crop of beets may generally be expected from it the next year. In the environs of Lille, near the southern frontier of this country, it is not an unfrequent thing for the farmers, by the free use of this strongly nitrogenous fertilizer, to grow upon a single hectare of land 100,000 kilograms of beets, but the roots, whilst unusually large, are cavernous and spongy and greatly deficient in sugar. Seeing, how-

ever, that not only in France, but in Belgium and Holland also, the cultivators sell their beets to the refineries at a price agreed upon per ton, and have no further interest in the sugar product, this kind of fertilization continues to be more or less practiced in these countries; but in Germany, and especially among the co-operative cultivators, who have a double interest in their crops, it is generally repudiated, for as the standard price per ton allowed for their crop is determined by the ascertained quantity of the sugar it contains, they have no motive to raise beets deficient in this matter, and especially as the Government levies a tax equal to 25 francs on every ton of beets that enters the refineries in which they are stockholders, regardless of quality.

MODE OF PLANTING.

Amongst successful beet-growers here there still exists a difference of opinion as to the mode of planting adapted to the product of the best crop, some advocating the sowing of the seed in rows on a flat surface, and others on elevated ridges. The latter mode, however, is now the more popular, and is in Belgium almost universally practiced. After a due preparation of the ground, the planting is done by a machine depositing the seed in ridges about 2 feet apart, previously made; and when the plants begin to show well upon the ground they are thinned out, so as to leave from 10 to 12 inches between those intended to remain. Whilst there are many advocates for larger spaces between the rows, and also between the plants in the row, from all I can learn, this plan, in a soil moderately rich, affords ample room for cultivation and produces the best results. The subsequent cultivation consists in destroying all weeds that may grow either between the rows or the plants in the row, and of loosening the soil and banking it up to the plants by small cultivators and plows adapted to the purpose; and the more frequently this is done during the growing season the better the prospects of a good crop will be.

BEET CULTURE IN THE UNITED STATES.

As the subject of net profit from any kind of agricultural industry is the one which usually determines its adoption or rejection in every country, the question for our American farmers to determine in regard to this cultivation is: Does it pay, or can it be made to pay? The answer to this interrogatory involves a number of considerations that must here be mentioned. However good the crops our farmers might be able to raise, they could not profitably dispose of them unless there were refineries to purchase them, and unless the manufacture of sugar from the beet can be made a profitable industry in the United States, refineries will not be built; hence, the difficulty in attempting to resolve this question.

Of the paying results to the limited number of refineries now in the United States I have no knowledge, and therefore cannot venture an opinion upon the subject, nor have I any reliable data from which to judge of the profits of the continental refineries, seeing that this is, as much as possible, kept a secret of the craft; but as all beets raised by the farmers are freely bought by the refiners it is fair to assume that the manufacture of sugar from them is profitable, otherwise their cultivation would soon cease.

PROFITS OF CULTIVATION.

The following facts showing the relative yield and value of some of the chief agricultural products of Belgium will, at least, indicate how the matter of profit stands with the farmers in this country. The average yield of wheat, per hectare, is 1,675 kilograms; of rye, 1,460; of barley, 1,830; of oats, 1,500; and of beets, washed and cleaned ready for the refinery, 35,000 kilograms. The average price of wheat is 28.50 francs per 100 kilograms; of rye, 23; of barley, 21; of oats, 19.80; and of beets, from 20 to 25 francs per ton. This estimate will give, per hectare, the following cash values of these respective crops, viz: Wheat, 477 francs; rye, 433; barley, 384; oats, 315; and beets, about 800 francs. Thus it will be seen that a hectare of beets will yield a cash value of 322 francs more than wheat, 367 more than rye, 416 more than barley, and 484 more than oats.

I am not able to give the exact proportionate cost of the cultivation of these crops in this country, but it may be accepted as a fact that the cultivation of a beet crop does not, by any means, involve an increased expenditure of money equal to the increased value of the crop raised over that of any of the cereals just named. From data now before me I fortunately can give an exhibit of the average cost and profit of this crop in Germany, and for this purpose have selected the following figures, taken from an estimate made in the Duchy of Brunswick, where all the conditions of price of land, soil, climate, and cost of labor are probably as well adapted to this purpose as any other.

Expense of cultivating per hectare.

	Francs.
Seed and preparation of the soil	140
Plowing, harrowing, and other cultivation	183
Artificial fertilizers	150
Rent paid to proprietor	150
Total expenses	623

Receipts per hectare.

	Francs.
28,000 kilograms of beets, at 27.50 francs per ton	770
35 per cent. of pulp, at 10 francs	98
Leaves and neck of plants for cattle food, valued at	50
Total receipts	918
Deduct expenses, including rent	623
Balance of profit to cultivator	295

This I doubt not would be as correct an average estimate of cost and profit for this entire continent as could well be made, and with it I leave the whole subject to the consideration of whom it may concern, merely remarking, in conclusion, that if in any country this can be made a profitable industry, it ought to, if scientifically pursued, be made so in the United States, where so much of both soil and climate favorable to it abound.

JNO. WILSON,
Consul.

CONSULATE OF THE UNITED STATES,
Brussels, February 15, 1884.

GINSENG CULTIVATION IN JAPAN.

[ort on method of cultivating ginseng, written by Yamaguchi Sheiguro, and forwarded by Minister Bingham. Translated by Mr. Whitney, interpreter, U. S. Legation.]

I.

SOWING AND MANURING.

he seed of ginseng may be sown twice a year, namely, during the nal and autumnal equinoxes; but in this district (village of Meina, county of Aidzu, province of Iwashiro, about 37° N. latitude, ° E. longitude from Greenwich) the seed is usually sown during the umnal equinox. The land on which the seed is to be sown is perted to lay fallow for one year, and during the year following the ss is cut and buried in the soil for the purpose of fertilizing it.

n April of the same year the land is plowed. Before the period ed Taisho (commencing about the 22d day of July) begins, horse nure and straw used in the stables are spread over the surface and clods of earth are broken up, and the land is divided into mounds, h about 3 feet broad, for sowing purposes. By means of the *meita*—oard about 2 feet in length, 1½ feet in breadth, in which is inserted ick about ¼ foot long, sharpened at one end—the surface of mounds moothed and the seed is sown in drills made with the *meita*. After ring, the surface of the mounds is lightly swept with a broom, and, order to protect the surface from the sun, straw about 1 foot thick pread over it. Before the period called Ko Kun (commencing about 20th day of April of the ensuing year) begins, the straw is removed, on both sides of the mounds sticks about 5 feet long are erected ut 6 feet apart, on which cross-bars are placed, over which straw ts are laid to protect the surface of the mounds from the sun, the ks on the north side of the mounds being higher than those on the th. Until the period of Taisho (about the 22d day of July) returns, ground must be kept carefully weeded, and during the first two years soil between the shoots of the ginseng must be hoed about seven or ht times, after which no weeding is required on account of the shoots ng considerably grown.

When the period called So Ko (commencing about the 23d day of Oc-er) begins, the color of the leaves becomes yellow, and the straw ts should then be removed. Twenty days after the period called Doyo, ich begins about the 18th day of January and continues seventeen eighteen days, the field should be manured. The quantity of ma-re for every tan (about ¼ acre) should be one *kan* and two hundred (=7½ catties =10 pounds)) of oil-cake, 6 sho (1 sho= 109.752 cubic ches, Hepburn's Dictionary) of rice-bran, and a quantity of night soil luted with water. The quantity of manure for every *tan* must be ubled in the second year, and trebled in the third year. In July of e fourth year the roots are dug up and dried. Ginseng is, during its owth, attacked by the mole, the rat, and a worm about 2 inches long, lled *hari-gane-mushi* (wire-worm), from its resemblance to a piece of ire. Of these the mole burrows in the field and overturns the roots the ginseng, so that the plants finally die; the rat follows the holes ade by the mole and eats the roots, consequently the latter is more

injurious than the former. The following means are used to protect the plants against these pests:

In order to prevent the mole from burrowing, boards about one foot square are inserted in the ground on all sides of the mounds so as to stop up the holes, or jars are buried here and there between the mounds, or pit-falls are made in the holes. In order to keep off the rat a bamboo tube filled with gunpowder is placed in the mole hole and the powder ignited, and the smoke remaining in the hole, prevents the rat from approaching. In order to protect the roots from injury by the *hari-gane-mushi* (wire-worm), onions, leeks, or dai kon (a kind of large radish) are planted between the mounds about one foot from one another; and when the worms attack these vegetables the vegetables are pulled up and the worms killed. These vegetables are planted for the purpose of attracting the worms.

II.

PREPARATION.

The roots of ginseng having been dug up, a portion of the stem about 3 inches long is cut off and the roots are washed in water with a brush.

Then the fibrous portion of the root about 1 inch long is removed—these fibers, called *moniku* (literally hair flesh), are used as a medicine, and the remaining parts are scraped with a bamboo knife, for the purpose of removing the particles of soil.

After these steps have been taken all the roots are classified into five species or grades, according to their qualities. Those roots which are large but injured, are called Ōmaré (literally large and rare), and those which are small and injured, Sho maré (literally small and rare). The *moniku* or fibers are sometimes classified as the sixth and seventh species. All the roots are then put upside down into baskets made of bamboo, each containing about one *kammi* (8.33 pounds) in weight of the roots. The baskets are then placed for five minutes in a liquid specially prepared, and which is boiling.

In preparing the liquid the following steps are prescribed: 5 *momme* ($=\frac{1}{24}$ pound$=\frac{2}{3}$ ounce) of ginseng, manufactured in the preceding year, 25 *momme* of licorice root, and 25 *momme* ($3\frac{1}{3}$ ounces) of *shai-shin* (a drug) are thrown into two (2) *tō* and 5 shō, or 25 shō (about 10 gallons) of water, and when the color of the water becomes brownish the residue of these substances is removed and $7\frac{1}{2}$ *Go* (1 *go*=53.475 cubic inches) of alcohol is added to the liquid. The roots of the lowest quality of ginseng are first boiled in the mixture and then all the other species are successively boiled therein, from the lower to the higher qualities.

They are immediately dipped into cold water, and when entirely cooled they are dried.

After ten baskets of ginseng have been boiled the liquid should be changed. A place open to the sunlight is to be selected for drying the ginseng.

The process consists in setting up a shelf with a shade made of split bamboos. On the shelf the roots are dried. During the daytime the roots must be turned over six or seven times; at night they are kiln-dried.

After about three days the skin becomes tolerably dry, and the roots become pliable. The stems and fibers are then entirely removed and the crooked roots are straightened.

After this they are again dried for four or five days; if the weather be rainy they are kiln-dried. The whole process of preparation now being completed, it remains only to put them in cases, first wrapping them in thick paper.

There are two or three other methods of cultivation, but they are mainly the same as the method described in this paper.

The quantity of seed required for planting one acre is about half a bushel.

Correct translation.

W. N. WHITNEY,
Interpreter.

CONDITION HOUSES IN FRANCE.

REPORT BY CONSUL PEIXOTTO, OF LYONS.

SILK CONDITION HOUSE OF LYONS.

In previous dispatches I have often had occasion to allude to the silk condition house of Lyons, the most thorough, perfect, and extensive of its character in the world.

It may be of interest to those engaged in the growing industry of silk in the United States to have some more detailed and definite idea of the business of this and similar establishments, which sooner or later must be organized and established with us, there being at present but one institution of this kind in the United States, located at New York.

CONDITIONING OF SILK, WOOL, AND COTTON.

Silk, wool, and cotton, in their raw or first stage of production, cannot be properly employed for textile manufactures. They must be submitted to multiple manipulations in order to be equal to the exigencies of good and proper fabrication; in fact, without these preliminary precautions the manufacturer is unable to determine the cost of manufacture or the quality of his production.

Experience has proven that all textile fabrics absorb atmospheric humidity to a very considerable extent, and first among these silk is so hygrometric that even in its dryest state, as when exposed to the open air, it contains not less than 8 per cent. without appearing wet.

"The fact of silk containing such considerable quantity of water," observes Mr. Adrien Perret, the late eminent director of the Lyons condition house, in his interesting and valuable work, Monographie de la Condition des Soies de Lyons, "presents from the commercial point of view very serious difficulties. It opens the door to dishonest dealings on the one hand, while on the other the manufacturer who employs this most precious raw material is exposed to serious miscalculations in his estimate of the cost of the manufactured article. The buyer has therefore an important interest to know precisely the net weight of the silk he purchases. Originally, and before the means of determining the weight was known, the buyer received a compensation and this 'don,' as it was called, formed part and parcel of every transaction. Later on, scientific means were discovered to fix the rate of deduction or actual weight."

Italy, the classic land of silk, was the first to discover and apply the "*modus operandi*" which now almost universally forms the basis for con-

ditioning the article. It was at Turin about the middle of the last century that the first silk conditioning or assaying house was established. In 1779 this institution was transferred to Lyons, where it has been exceedingly prosperous.

There are different processes for conditioning, all however have for their object to determine the weights of the silk after desiccation. Water is, however, not the only heterogeneous substance which increases the weight of textile fibers; other substances are also mixed more or less with wool, cotton, and silk which disappear after washing or scouring of the threads. These foreign substances are sometimes natural, and sometimes the result of fraudulent practices. Silk, for instance, while still inclosed in the worm, is a compound substance, a fiber wrapped up in an impervious envelope, the chemical composition of which, as is shown by analysis, is analogous to that of *osséine*. This envelope is technically called *grés de la soie*.

By the processes of boiling, the silk is divested of the grés which it contains. The operation called "décreusage" or "cuite" is applied for removing the grés; if prolonged it gives a silk "cuite" or boiled, and it is this operation which is generally employed, as otherwise treated only a part of the grés is removed.

The commercial value of textile fibers is only really ascertained and determined when the threads have been assayed or conditioned, that is to say, only after the operation of weighing and *décreusage* or boiling, which determines mathematically the thickness and the regularity of the thread.

The test of the regularity of the silk thread is now perfectly determined by the *serigraph*, a remarkable invention made by an American engineer (Mr. Edward W. Serrell, jr.), very fully described in my dispatch to the Department of October 22, 1881. [Published in Consular Reports No. 14.] These tests may be made by every person interested in silk, private individuals as well as corporations.

In Lyons, St. Étienne, Rheims, Roubaix, &c., where the manufacture and commerce in silk, wool, and cotton are carried on extensively, public condition houses have for a long time been established. The Lyons condition house became the property of the Chamber of Commerce by a decree of Napoleon I, in 1805. Its transactions amount to $120,000 to $130,000 per annum. In 1882 its business, after deducting $40,000 expenses, showed a net profit of $80,000.

The success of this establishment has been largely due to the late Adrien Perret, one of the first, if not the very first, of silk scientists, who was connected with the institution (until his death by an accident a few months since) for nearly a quarter of a century, and who, to a thorough technical knowledge (he was a graduate of the École Polytechnique, the West Point of France) added an administrative ability of the highest order and a character of exalted worth.

PUBLIC CONDITION HOUSES OF FRANCE.

The public condition houses of France are authorized by the Government, and are administered by the chambers of commerce or municipal authorities. Their transactions are carried on by tariffs fixed by the Government, which, however, are moderate, and have the advantage of possessing an official character as between seller and buyer. These public condition or assaying textile establishments have justly acquired a deserved and decisive authority.

In France there are thirteen authorized silk condition houses. These

consist, according to the volume of business transacted, of those of Lyons, St. Étienne, Avignon, Roubaix, Paris, Marseilles, Aubenas, Privas, Nimes, Montélimar, Tourcoing, Amiens, and Valence.

During the year 1883 these establishments received 104,049 bales, and conditioned 6,798,987 kilograms of silk. Lyons alone conditioned 70,528 bales, weighing net over 10,500,000 pounds of silk. St. Étienne followed with 14,242 bales, weighing net over 2,000,000 pounds.

Comparatively little silk is conditioned at Paris, Aubenas, Avignon, or Marseilles, and at the other places there is scarcely any silk submitted. The consular district of Lyons may consequently be considered to represent almost, if not entirely, the silk industry of France.

WOOL CONDITION HOUSES.

The commerce of wool and woolens is, on the contrary, distributed in the northwestern departments. The eight public condition houses of this textile are located, according to the order of their business, at Rheims, Roubaix, Paris, Lyons, Amiens, Fourmies, Nimes, and Tourcoing.

The transactions of these establishments in 1883 amounted to the conditioning of 445,513 bales or 47,517.445 kilograms of wool. Rheims headed the list with 69,209 bales and 7,505,437 kilograms.

COTTON CONDITION HOUSES.

There are five authorized cotton condition establishments in France, located at Roubaix, Turcoing, Amiens, Nimes, and Paris. Roubaix conditioned 21,008 bales, representing 2,301,833 kilograms of cotton, and Turcoing 8,128 bales, or 806,139 kilograms, upon a total for the whole of last year of 29,373 bales and 3,111,519 kilograms of conditioned cotton.

INCREASE.

Comparing generally the operations of these public institutions in 1883 with the year 1882 the result is an increase for the past year of 34,956 bales and 2,932,356 kilograms for wool, and an increase of 1,767 bales and 251,595 kilograms of silk.

DECREASE.

Making the same comparison for cotton fibers, there was a decrease of 1,467 bales and 115,121 kilograms.

Though the foregoing are official figures of public establishments, and consequently do not include those of the many private bureaus which exist throughout the country, they nevertheless present a very just idea of the present situation of textile manufactures in France.

The public condition houses are the legitimate and reliable sources of control, and naturally absorb almost the entire business of textile commerce.

BENJAMIN F. PEIXOTTO,
Consul.

UNITED STATES CONSULATE,
Lyons, February 25, 1884.

SILK CULTURE IN AUSTRIA-HUNGARY.

REPORT ON SILK CULTURE AND PRODUCTION IN AUSTRIA-HUNGARY, PREPARED BY THE MINISTRY OF AGRICULTURE BY REQUEST OF THE FOREIGN OFFICE AT VIENNA, IN RESPONSE TO A COMMUNICATION FROM MINISTER TAFT.

MEMORANDUM OF THE MINISTRY OF AGRICULTURE CONCERNING THE PRESENT STATE AND EXTENT OF SILK CULTURE IN AUSTRIA.

First. The recent revival which silk culture has experienced in Austria is due, in part, to the enterprise of interested parties, and in part to the stimulus and assistance given by Government.

Second. It steadily advances according to circumstances; the production of silk is, however, like the production of other animal and vegetable materials, subject to rise and fall, and no constant increase is therefore to be recorded.

Third. Silk culture is favored by the Government by the fixing of certain prices, as well as by practical assistance. The Imperial and Royal Institute for the Culture of Silk and Wine, at Gorizia, near Trieste, has for its object the diffusion of knowledge of practical culture and careful selection of proper seeds, and is also actively engaged in providing sound grains.

Lectures on silk culture are being held every year at that institute, which are attended, partly at the expense of the ministry of agriculture, by the cultivators of the southern provinces of the empire.

Aside from this institution, there exist also in the districts where silk is cultivated a number of observatories and seed examining stations, receiving a subsidy from the Government, which serve the same purpose as the main institute at Gorizia.

The extremely favorable results of the cellular grains rendered it possible that the method for obtaining them should not only gain great extent, but that the silk culture should also experience a considerable increase.

The ministry of agriculture has not only made it possible to keep up these stations, but has also furnished the means necessary for the publication of a popular work on cellular grains.

At Roveredo the Government gave assistance to studies and experiments respecting the merits of the yellow species of *Bombyx morse*, brought from Brianza, near Milan, as a remedy against the worm disease.

Although experiments made for a number of years to introduce silk culture in the countries north of the Alps have conclusively shown that this can be done, no results have as yet been attained which would encourage continuation, and therefore the ministry of agriculture has resolved to grant subsidies to silk culture only in those southern provinces where it has for ages formed a source of income for the population.

The subsidies are paid for the establishment of institutes to examine the seeds and for the distribution of sound grains and mulberry trees to small cultivators.

Fourth. The reasons for success consist chiefly in the fact that cultivators in possession of sound grains and with the knowledge of practical methods of raising are enabled to produce with greater success, and are stimulated to greater activity.

Fifth. The greatest obstacles to the culture of silk are the competition made by Eastern Asia and its low prices, as well as the great danger arising from the disease to which the silk-worm is liable, and which is known as torpor (*Schlafsucht*).

Sixth. As the Asiatic competition cannot be removed, it is advisable to localize the culture of silk where the conditions of climate are favorable to the undertaking, and where the cost of labor is such as not to overburden the production by too great a capital invested.

To meet the dangers to which the silk culture is exposed by the appearance of different diseases, especially the fatal spotted disease, the Government has devoted its attention to the discovery and examination of means to overcome these diseases.

In the year 1869 a prize of 5,000 florins was offered for the best remedy to cure and protect the silk-worms against the spotted disease. This prize was paid in 1871 to Mr. L. Pasteur, member of the Institute of France, for his mode of cellular grainings, which, although not claiming to effect a cure, was an effectual means of preventing the disease, and being simple and easily applicable, has found already universal application.

Professor Haberlandt, well known through his labors for the improvement of silk culture, since deceased, has published several works at the instigation of the ministry of agriculture, treating of the diseases of the silk-worm. The studies, as already stated, are being continued at the Institute at Gorizia.

Seventh. Ever since the time of the reign of the Empress Maria Theresa silk culture has been promoted in Austria by the Government. At that time great plantations of mulberry trees were planted, and a fund for the redemption of silk cocoons was established.

The activity of the Government received the co-operation of farmers' associations and special companies.

Since the creation of a ministry of agriculture the promotion of this branch of industry has been assigned to it as belonging to its department. The manner in which this promotion is effected has been explained in the foregoing paragraphs.

The following table gives the quantities of cocoons produced from 1865 to 1881:

Silk-cocoon harvest in the kingdoms and countries represented in the Reichsrath during th years 1865 *to* 1881.

	Quantity of cocoons in kilograms.
1865	802,531
1866	1,089,340
1867	1,858,097
1868	2,251,206
1869	2,804,257
1870	2,540,243
1871	2,545,669
1872	2,662,560
1873	2,016,700
1874	846,250
1875	1,243,296
1876	892,551
1877	1,280,570
1878	2,367,652
1879	1,080,730
1880	1,469,293
1881	1,877,818

ITALIAN COCOON HARVEST OF 1883.

REPORT BY CONSUL CRAIN, OF MILAN.

The statistics of the cocoon harvest of the year 1883 in Italy are more favorable than was anticipated. The total quantity of cocoons exceeds 42,000,000 kilograms.

Silk-worms were bred in sixty provinces; those in which they were not bred are Bari, Foggia, Lecce, Palermo, Syracuse, Caltanisetta, Girgenti, Trapani, and Sassari.

The diffusion of the industry will be better understood by the statement that it was carried on in 3,015 of the 5,244 communes.

The following were the results in the several agricultural departments:

Departments.	Thousands of ounces (of 27 grams) of seed placed in incubation.	Thousands of kilograms of cocoons produced.	Average product per ounce.
			Kilograms.
Piedmont	235	5,233	22.27
Lombardy	587	18,001	30.68
Venice	341	8,666	25.43
Liguria	10	243	23.79
Emilia	74	2,850	38.45
Marches and Umbria	33	1,797	.20
Tuscany	55	1,876	54.20
	3	74	34.29
Southern Adriatic	2	104	28.27
Southern Mediterranean	94	2,477	45.14
Sicily	22	890	26.38
			40.37
Total	1,456	42,221	29.00

These figures compare favorably with those of the three preceding years, as the following will show:

	Kilograms.
1880	41,674,000
1881	39,838,000
1882	31,890,000
1883	42,221,000

The average product per ounce has also exceeded that of the three preceding years:

	Average product per ounce in kilograms of cocoons.
1880	24.24
1881	25.01
1882	23.73
1883	29.00

On the other hand, the quantity of seed put in incubation is considerably diminished:

	Thousands of ounces (of 27 grams) put in incubation.
1880	1,719
1881	1,593
1882	1,345
1883	1,456

In view of the foreign competition, which, since the silk-worm malady, has threatened the Italian silk industry, the above results are considered very encouraging. The smaller quantity of seed employed is of itself a great saving of capital, while the total product is considerably increased. This result is due largely to improved systems of breeding, which, when still further perfected, will add largely to the profit of producers.

Another decided improvement is the substitution of Italian seed in place of that imported:

Year.	Thousands of ounces of seed put in incubation.	
	Italian.	Imported.
1880	370	637
1881	422	449
1882	430	327
1883	552	233

The reasons of such substitution are that producers can make a better selection than by buying from abroad, and that they get a larger product per ounce from native seed when it is free from infection. This is shown as follows:

Year.	Average product per ounce in kilograms of cocoons obtained from seed.	
	Native.	Imported.
1880	30.23	22.08
1881	26.61	22.98
1882	25.57	20.40
1883	31.48	25.65

This difference of product, with few exceptions, has been realized in all parts of the country, and in each of the above-mentioned years. The reason is believed to be the acclimatization of the seed. It is, in fact, established that the product of foreign seed reproduced in Italy is always greater than that of original foreign seed. The results in this regard have been as follows:

Year.	Average product per ounce of foreign seed in kilograms of cocoons.	
	Original.	Reproduced.
1880	22.08	23.05
1881	22.93	25.37
1882	20.40	24.30
1883	25.65	28.11

It is confidently expected that greater advances will be made in the future, as producers everywhere are profiting by the Pasteur system of microscopic inspection. The minister of agriculture contemplates es-

tablishing "osservatori bacologici" in different parts of the country, where the examination and selection of seed will be carried on, and where also a course of lectures, theoretical and practical, will be annually held for the benefit of producers who may wish to attend them.

DUNHAM J. CRAIN,
Consul.

UNITED STATES CONSULATE,
Milan, Italy.

COPPER MINES OF SANTA CLARA, CUBA.

REPORT BY MR. E. G. SPILSBERG, TRANSMITTED TO THE DEPARTMENT OF STATE BY CONSUL PIERCE OF CIENFUEGOS.

In accordance with your request I have visited the mines of Manicaragua, on the island of Cuba, and herewith beg leave to submit to you my report on the same.

SITUATION.

The mining concessions belonging to the Manicaragua Company are at present six in number, two being known under the name of the Santa Rosa mine, two as the San Fernando, one as the Santa Isabella, and one as the San José. These concessions are all situated in the province of Santa Clara (which is about the most central province of the island) and distant from Santa Clara, the capital of the province, about 27 miles in a southerly direction. They lie in a range of mountains which form the northerly water shed of the Arimao River, one of the chief rivers of the island, and also the northern boundary of the Manicaragua Valley. Finally they are about 30 miles from the port of Cienfuegos, one of the most active ports on the south coast of the island.

All four of the mines now belonging to the company have been worked to a very considerable extent in olden times, and from appearances large quantities of ore have been taken away, but the revolutionary wars which have devastated this whole section of the island for the last ten or twelve years did not spare these properties, and all the improvements were either burnt down or otherwise destroyed, as also most unfortunately were all the records appertaining to them. The only item I could find appertaining to them was in the remains of the mining records in Havana, where I find a note that, in 1868, the amount of copper ore shipped by the company to Swansea, Wales, was 3,253 tons, for which they received £54,446 8*s.* 7½*d.* The average percentage of copper for the year is given at 19.7 per cent., and the average price of copper in Swansea is for the year given as 16*s.* 8⅝*d.* per unit. This, I believe, is the only record extant on the island of all the workings of these mines.

The mines having been abandoned during the war, were confiscated by the Government, and were relocated during the present year by Don Claudio de la Vega, of Santa Clara, who with his associates are the vendors to the present company.

CUBAN MINING LAWS.

Before going further it may be well to say a few words regarding the laws of mining on the island. According to the statute, all the minerals

belong *de facto* to the Crown, and not to the owner of the land where they may exist, and are open to location by any prospector who may discover them. The land-owner is indemnified only for the actual damages to the surface, and for the land taken by the concession. The amount of damage is determined by the chief engineer of mines on the island. Everything in the law tends to promote as much as possible the extension of mining on the island, and therefore the miner is facilitated in his operations in every respect, to the disadvantage of the land-owner. The concessions are all of uniform size, being 300 meters (975 feet) long by 200 meters (650 feet) wide, the mining right only extending down between these vertical lines; several of these concessions may be taken up together by the same discoverer, and if a company is formed to work them, it is allowed to hold as many as 22 of these concessions in one group. The "San Fernando," as before stated, contains two of these concessions, making a total surface of 600 meters by 200 meters (1,950 feet by 650 feet). The Santa Rosa and the combined concessions of San José and Santa Isabella comprise a similar area each.

GEOLOGICAL FORMATION.

The mineral deposits of this section are situated in the metamorphic magnesian rocks, which cover the greatest portion of this part of the country. The exact age of the formation is difficult to get at, but is evidently subsequent to the Cretaceous, which seems to be the earliest sedimentary formation on the island. The immense overflow of eruptive serpentinic and dioritic rocks now forming the long ranges of mountains in this part, and in fact nearly all over the island, broke through the limestones and slates of the Cretaceous epoch, which are still visible in places and cover the plains. At a period still subsequent to this first eruption there seems to have taken place a second one of somewhat less magnitude, and the masses of magnesian rocks were displaced and upheaved by the intrusion of large dikes or bodies of a siliceous feldspathic porphyry, which broke through the serpentine rocks in a northwest and southeast direction. The serpentine, being probably still in a more or less plastic condition, yielded but slowly to this intrusion and was bent and folded into shapes, giving almost the appearance of regular stratification. It is worthy of remark that these dikes, although of great magnitude, come but comparatively seldom through to the surface, but where they do they show out boldly, forming the crests of several of the highest mountains of the range.

The primary mineral deposits, consisting principally of sulphuret of iron, copper, and zinc, invariably occur, as far as I have been able to examine, at the contact of these porphyry dikes with the magnesian rocks; but a secondary series of mineral deposits occur in the dykes themselves. These last deposits, although of great dimensions, are chiefly of oxidized ores, such as hematites, oxides of manganese, carbonates, silicates, and oxides of copper. They are probably produced by the action of waters passing through the crevices containing the sulphurized minerals and partially decomposing these latter, finding no egress possible through the beds of serpentine; these waters have percolated through the dikes, and as a large percentage of carbonates of lime and magnesia enter into the composition of these latter it has decomposed them, carrying off the lime as a soluble sulphate and depositing the mineral oxides it formally held in solution. A very curious example of this is still process taking place at the mines of San Fernando, where the dike, having pushed its way through to the surface, has furnished

an easy mode of egress to the waters along the line of contact. Here we find several large springs, containing very considerable amounts of sulphates of copper and iron in solution, flowing from the mountain side. These springs, which flow at a minimum of 70 gallons per minute, all the year round, hold in solution from 2 to 3 pounds of metallic copper per 100 gallons of water, and from 7 to 8 pounds of metallic iron to the same volume. As long as these streams flow over the serpentine rocks but a very little deposition takes place, and that principally of the iron, but about a quarter of a mile below the stream crosses a formation of dolomitic shale, and immediately the precipitation becomes very marked at the same place; another stream coming from the other side of the dike, and holding a large percentage of lime in solution, enters the first stream and immediately the precipitation of the copper and iron takes place with great rapidity. This precipitation is so marked and so rapid that a few hundred yards below the water is entirely freed from all trace of copper and iron, and is even quite palatable. The carbonates, oxides, and silicates of copper and iron are deposited in a very fine slime in the bed of the creek during the dry season; but as they are very fine and in a flocculent condition each rainy season causes them to be washed away down into the Arimao River and thence seaward. At the time of my visit I should compute the amount of copper precipitate in the creek bed at not less than 150 tons, and during this dry season the precipitation is progressing very fast, but the first freshet will clean out the bed of the stream completely, leaving it ready to receive next year's deposit. As this action has been going on for untold ages, and as the Arimao River is in places very wide, it is not at all improbable that very large deposits of these precipitates may be found at some points in the river bed.

To return now to the mineral deposits themselves. The primary deposits being in the form of contact veins between two eruptive rocks may be fairly considered as fissure veins rather than contact veins, and there seems to be no reason to doubt of their continuity and permanence in depth. As to their superficial extent there is no possible doubt, being already well demonstrated. The extent of the secondary mineral deposits will probably not be very large or extended to any very great depth. Their presence being evidently due to decomposition by the mineral waters of large masses of carbonates of lime and magnesia inclosed in the porphyry, which masses were probably fragments of the superincumbent rocks detached at the time of the upheaval and floating on or near the surface of the upheaving mass. Of course, if it should prove that the dikes in depth contain more or less lime in their composition, then the possibility of the continuance of this character of deposits in depth becomes greater.

This being the case, the mining of the oxidized ores will always be more or less difficult and uncertain, as the pockets will be found to have no regular connection one with the other, but on the other hand near the surface they are so close and so blended together that the whole dike may in many cases be considered as one mineral bed and worked as such.

At San Fernando, for instance, such is really the case, and the whole of the dike there was supposed to be the vein and consequently nearly all the old workings are in the wrong position and are running away over the top of the actual veins into the decomposed serpentine. I should add here that at and near the contact the magnesian rocks are always more or less decomposed, and certain strings and small veins of oxidized mineral run through the crevices for some distance. These

are what in most cases misled the old miners, and consequently most of the old workings really run over the top of the veins and away from them.

Now, in regard to the future workings of this property at San Fernando, I should advise that before laying out the new works, at least two of the old shafts be cleaned and the water pumped out. At the bottom of No. 1 shaft there is evidently a very considerable vein of zinc-blende, mixed with copper pyrites, as evidenced by the piles of ore which were stowed away in the lower portion of the old workings above water level. This ore will have to be separated before it can be marketed to advantage. I would advise the erection of a small hoisting engine at each of these shafts, and also a steam pump. In addition to this work I would advise running in a tunnel or adit, at as low a level as can be obtained, at the spot where the chief copper springs now issue. This adit should be run in the direction of No. 1 shaft, and will cut it about 90 feet from the surface. All the ores, and also the water, would then be discharged through this level. It will be necessary also to erect concentration works near this spot to dress the ores, as there are immense bodies of low-grade ores now exposed above water level which are too poor to use in their present condition, but which will pay well if concentrated. Then I should further advise the erection of a matte furnace, as it will never pay to transport the low-grade sulphurets at the present rate of freights. With this in view, I examined closely into the question of fuel, and find that around the mine itself there is little or no timber land available for charcoal, but at a distance of about 3 miles from the property I found a very large tract of good woodland, the refusal of which I have secured for the company on very easy terms, namely, about one dollar per acre. This property when cleared of its present growth of timber will be worth at the lowest estimate from $15 to $20 per acre, so that under any circumstances it will be a good investment.

In order to save fuel as much as possible, it will be necessary to erect, as soon as possible, a concentration works, say of a daily capacity of 40 tons. At first these works would be run entirely on the old dump piles of the mines, which contain still very many thousands of tons of good copper ore disseminated through them, and which will pay handsomely for concentration. Also, all the low-grade ores in the mine, of which there is an enormous quantity, would naturally be treated at those works.

The next necessary improvement will be the arrangement of some method to treat the copper held in solution in the springs. The simplest method of doing this, and the one which would require the least outlay at first, would be an enlargement of the present arrangement of precipitating the copper by means of scrap iron; but a great objection arises to the use of this method, which is the cost of the iron. I find it could not be bought and delivered on the property for less than $55 per ton, and as the precipitate would when procured be not worth much over $200 per ton, this tax would be too much. With this in view, I made several experiments to find other cheap precipitants, and have decided that the best and cheapest plan in the long run will be an arrangement by which lime will be used as a precipitant.

In the experiments I carried out, I found that with 5 pounds of poor air slack, which was all I could procure at the time, I could *instantaneously* extract every trace of copper from fifty gallons of the liquor. After this it required some time for the complete action to take place, but showed perfectly that 1 pound of good lime will easily precipitate 1.10 pounds of copper. This lime will cost less than $5 per ton deliv-

ered at the mine. In order to properly utilize these springs it will be necessary to concentrate the liquor by evaporation in a series of tanks, which can be done at a very small expense. As these waters show by analysis that they contain 3 pounds of metallic copper per 100 gallons of water, and as they flow at a minimum rate of 70 gallons per minute all the year round, this ought to yield at least 3,024 pounds of copper per day; but say that only two-thirds of this is realized, or that the water only contains 2 pounds per 100 gallons, then we still have a daily yield of 2,016 pounds or one ton of copper; this at present market rate for copper, say 20 cents per unit, would be equal to $403.20 per day, or an annual yield of $147,165. The cost of evaporating the waters, handling the cement copper, shipping to market, refining the cement, and all other expenses, will not amount to over 3 cents per pound or $160 per day or $53,400 per annum, showing a clear profit of $88,765. This estimate of profit is of course subject somewhat to the market fluctuations. Still, when it is taken into consideration that this item is only really a branch of the real work on these properties, which will consist of regular mining, concentration and smelting into matte, it will easily be understood what large profits may reasonably be expected by the judicious working of every part of this property.

I have heretofore spoken of the copper as a metal, but a large proportion of the copper now in solution can be utilized in the form of blue vitriol, which will be of great purity and will command a very high price in the market. Large quantities of this would be consumed on the island.

In addition to the copper found on these properties, I would also call your attention to the large deposits of zinc-blende which evidently exist in the lower parts of the mine. In the San Fernando mine, for instance, those deposits must be very rich. The old miners not knowing its value, but having to mine it with the copper, separated it before hoisting the latter to the surface, and piled the blende back in the old workings. I have no doubt but that over 1,500 tons of this rich ore now lie in the dumps and old workings, requiring nothing but a hand-sorting to prepare it for the market.

My estimate for the production of the San Fernando and San José mines, after the preliminary work of opening has been properly done and the necessary machinery appliances introduced, is 20 tons a day of first-class ore, averaging 22 per cent. copper, 10 tons a day of good zinc-blende, and 35 tons a day of ore to be run into matte. This ought all to yield a clear profit, over and above all expenses, of $15 per ton, or say $650 per day. The rich copper ores of course will yield about $30 per ton above expenses, so that an average of $10 is not above the mark, but rather under it. In conclusion, I do not hesitate in saying that the prospects for large profits by the judicious and economical working of these properties are very far above the average of promising mining enterprises. There is a large amount of available ores on hand for immediate returns, and while the preliminary operations of reopening the mines by shafts and tunnel is going on, profits will continually be realized from the immediate utilization of your copper springs.

Before closing I would say that before leaving the island, in the company's name I took the necessary preliminary steps to procure from the governor-general of Cuba an order releasing all the machinery, tools, and mining supplies required at the mines from all import duties, and I had the assurance, from the Government chief engineer of mines, that the governor has promised to issue this order.

RUSSIAN AND AMERICAN PETROLEUM.

REPORT BY CONSUL VAN RIPER, OF MOSCOW.

ıe honor to confirm my dispatch No. 26, dated 23d December, mit a literal translation from the Moscovski Listok, a very newspaper published here, of a leading article comparing the industry of Russia and America; it gives the Russian idea bject, which, from their standpoint and the rapid develop- s industry in this country, seems to justify their predictions. ıay prove of interest. The article is as follows:

the first place of the naphtha industry was maintained by the North ıion, especially in Pennsylvania. The second, Russia with Baku. It ver, that before long Russia will surpass America in this industry, which ş details may possibly prove. In the first place, we draw attention to . At the beginning, naphtha wells in America were bored from 500 to ep, and were far more productive than those at present; by boring from) feet deep, it shows that the upper beds, formerly yielding large quan- ıtha, are already exhausted, whereas the lower beds now contain smaller this material, in comparison with others, and an entire exhaustion of to be expected in a short time, such having been the case with the up- Inless new naphtha wells are discovered of greater productiveness than isting, the American naphtha industry will cease entirely ere long; but if er will be found is a question, taking into consideration the fact that the ild cats" (a class of people in America occupying their time exclusively such wells) have already searched all corners without any result what- ve at last come to the conclusion that the American naphtha industry has nd.

ion in Baku looks more favorable and promising. At present there are lls bored by hand, of 50 feet depth, and about another 400, from 300 to h.

ctiveness of these wells is enormous, each giving daily about 10,000 poods and without apparent exhaustion. In Baku there are a great many wells, rger quantities. On the 17th (29th) July last year a well on the property of was discovered, and which a few days after yielded about 400,000 poods ter the wells had produced 8,000,000 of poods (of 40 pounds), another well, da Company, yielded about 500,000 poods a day. There has no such yield f in America, and besides those in Baku it is known that a great many a wells exist in other parts of Europe and Asia, especially in the Cau- iflis, Dageston, on the Terk and Kuban, on the peninsula of Kertsch and he island Seviatoi, and in Turkomania, all of which are waiting to be Should Baku and other districts in Russia diminish their production in ds, as such has already been the case in Pennsylvania and in other dis- erica, Russia will have to follow the example of the Americans, which g deeper, to the lower beds.

ty the latter contains, whether more or less than the upper beds, is not yet it is a fact that in America the lower beds are proportionately deficient n as compared with the upper beds; therefore, as regards quantity, all or the Russian industry, and, whatever the quantity, there are means properly working and developing this industry.

ttention is drawn to the quality. The Pennsylvania naphtha produces cent. benzine, gasoline, &c.; 70 per cent. petroleum; 5 per cent. astral; .; 6 per cent. heavy grease and paraffine oils; 6 per cent tar and pitch; 3 es and gas; total, 100 per cent. Whereas the Baku naphtha contains 5 ızine, gasoline, &c.; 33 per cent. petroleum; 10 per cent. astral, solar oil, cent. heavy grease and paraffine oils; 15 per cent. tar and pitch; and 4 e and gas; total, 100 per cent. Comparing the above analysis, the result at Pennsylvania naphtha contains a greater percentage of lighter sub- e that of Baku a larger percentage of heavier substances.

alue of the Pennsylvania naphtha represents only light oils, whilst that of heavier substance, comparatively, the grease oils, of which, containing find an increasing sale and at much higher prices than petroleum does, per cent. is found in Pennsylvania, against 33 per cent. in Baku. As re- of both petroleum and grease oils in both sorts of naphtha the following

should be maintained: The Pennsylvania naphtha in average has a special weight of about 0.79, against 0.82 of that of Baku, this difference arising from the Baku petroleum containing a smaller quantity of light and undesirable substances, benzine, than that of Pennsylvania, in consequence of which the latter is less dangerous as regards explosions; it also contains far better grease oils and possesses more "light" powers.

For the development of an equal quantity of naphtha America requires thousands of wells to a few hundred in Baku. Boring without success happens frequently in America; in Baku very seldom. Labor in America is very dear, whereas in Baku it is obtained at 30 to 40 copecks (15 to 20 cents) per day, especially with Tartars or Persians. Building materials, especially stone, &c., in the Caucasus are to be found in abundance; likewise chemicals, such as sulphuric acid and soda, can be bought at very low prices. Russia is also well supplied with heating material, which is a most important item. In consequence of all this it is said that the Russian naphtha industry can produce cheaper than America.

Russia, with its 100,000,000 inhabitants, Persia, and Central Asia, are now safe customers for the Russian naphtha industry. The transportation from Baku via the Caspian Sea and along the Volga, also by rail to St. Petersburg, Reval, Riga, and Libau, thence to Northern Europe, where naphtha is used, is not dearer than from New York or Philadelphia. To the south and east of Europe it is much cheaper than from America. The distance from Baku to Batum is 900 versts (1 verst=1.07 kilometers), against which the oil districts of Pennsylvania and New York over the ocean is very much further. Taking into consideration all these facts, say, that nahptha in America is growing less while Russia possesses enormous quantities and splendid qualities, that the cost of production in Russia is much cheaper. That the latter is well situated as regards markets.

It seems almost a certainty that the American naphtha industry must give way to the Russian, and this period is approaching rapidly, because while America is going backwards in this industry, Russia is progressing, and more capital is being invested every day. The Nobel Company have already invested a capital of 20,000,000 of roubles in the Baku district; Baku has developed into a town containing 20,000 workmen, whose experience and technical knowledge is at least equal to that of the American. During 1882 Baku has shipped, say, only via the Caspian Sea, 25,000,000 poods of naphtha, including 12,000,000 poods petroleum. The railway which has recently been opened between Baku and Batum affords special opportunities of transporting naphtha across the Black Sea. To prove the capacity of the Nobel Company to undersell the American production, they sell theirs, the first quality, at the low price of 25 copecks (10 cents) per pood (40 pounds), without barrels.

E. G. VAN RIPER,
Consul.

UNITED STATES CONSULATE,
Moscow, December 31, 1883.

SUGAR AND PETROLEUM OF CARDENAS.

REPORT BY COMMERCIAL AGENT NUNEZ, OF CARDENAS.

Sugar and molasses are the staples of overshadowing prominence to this district of the island of Cuba, though there are others, such as asphaltum, honey, mahogany, and cedar, that are increasing in importance.

The centrifugal sugar is the article principally manufactured for and exported from Cardenas, and its manufacture is increasing, while that of melada is decreasing, having fallen off from 18,345 hogsheads in 1879 to 3,935 hogsheads in 1882.

Melada is a low class of sugar, and is nothing more than the juice of the cane boiled to a certain consistency, but without reaching the full point of crystallization. The centrifugal sugar passes through several processes, and finally through the centrifugal apparatus, after which it is ready for package and shipment. It is possible to cut the cane from the field, run it through the press, extract and clear the juice, and pass it through the various boilings and evaporations, and finally through

ifugal apparatus, and have it stowed and ready for its market
e day.
llowing table will show the products that have been shipped
denas for the past four years:

Sugars shipped in 1879, 1880, 1881, 1882.

ds	104,625
	1,443
ds	103,302
	162
ds	103,459
	2,267
ds	147,735
	1,170
	1,134

Melada shipped in same years.

	Hogsheads.
	18,345
	7,230
	4,028
	3,935

Molasses shipped in the same years.

ds	41,983
	5,481
ds	54,413
	5,380
ds	50,156
	4,847
ds	71,226
	7,115

Honey and asphaltum, same years.

um	hhds..	556
um	hhds..	922
um	hhds..	375
	tierces..	497
um	hhds..	747

2 there were 559 mahogany and cedar logs shipped from this

il of a very superior quality has been struck near Cardenas, and pumped to advantage. It is said to be a purer oil than any l imported from the United States.

l statistics have not yet been published here, but it is generally d that there is a falling off of the sugar crop of 1882 and 1883, district, of 20 per cent., as compared with the former year, much new land had been brought into cultivation for cane

The promise of a large crop in the early part of the season was generous, but the failure of rains caused that promise to be compromised, and has proved disastrous to many who are interested in the cultivation and shipment of that great staple.

There are many considerations which cloud with doubt the future prosperity of this island. The first is the competition of the saccharine matter of other countries from other vegetable productions than the sugar cane; and another consideration more formidable than the first is the oppressive burdens which land and improvements here have to bear.

The tax on city property in Cardenas is 16 per cent. of its incomes, less 25 per cent. of the tax allowed for repairs; while the tax on plantations is 2 per cent. in the capacity of production, less 62 per cent. of the tax allowed for expenses.

The export duties on sugar and molasses, which necessarily are borne by the estates producing these commodities, are as follows: On sugar, $5.45, Spanish gold, per hogshead of 620 kilograms, and in proportion as the hogshead is larger. Five dollars and forty-five cents Spanish gold is equivalent to $5.0794 United States gold, and 620 kilograms are equivalent to 1,368.31 pounds.

The export duty on molasses is $2, Spanish gold, per hogshead of 600 kilograms, which in the United States currency and measure is $1.86⅔ American gold per 124.22 gallons, a gallon being equal to 4.83 kilograms. These duties are collected now with a reduction of 15 per cent.

Another element that works silently but injuriously against the material interest of the island is the lottery system, which takes from the labor field a large number of hands and diverts the wages of labor into a very unproductive and demoralizing channel.

JOSEPH A. NUNEZ,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Cardenas, Cuba, June 8, 1883.

COTTON AND COTTON GOODS TRADE OF MEXICO.

REPORT BY CONSUL LAMBERT, OF SAN BLAS.

Cotton is indigenous to the soil in this portion of the State of Jalisco, and is grown on the alluvial belt running parallel with the coast, as well as up the valleys of the San Pedro and Santiago Rivers.

The average crop will yield a bale and a half to the acre, but two and a half bales are frequently realized in a favorable season. Each bale contains about 160 pounds, and that weight is strictly adhered to for the reason that two of them make a load for a pack-mule.

There is enough planted in this vicinity to produce an excess of local demand, provided it yielded as much per acre regularly and was as sure a crop as that planted in the Mississippi Valley. It is, however, attacked by the worm, and a climatic phenomena also prevails which renders cotton-raising at the present time a precarious undertaking. Although our seasons are distinctly separated by the wet and dry periods, yet there is liable to occur, during the latter part of January and early part of February in each year, a short spell of showers called *el tiempo de los carbañuelas*, which is a provincial proverb meaning "the time of weekly offerings to the shepherds."

Cotton is generally planted at the end of the rainy season, during the onths of September and October, consequently the boll is about rmed when this unfriendly season arrives. A few days of cloudy eather at the setting of the boll, or a continued shower without an in- rval of sunshine, or a few cold nights in succession, absolutely kills e boll, which immediately drops and the plant dies. It will thus be en that cotton-raising in this immediate vicinity cannot be rated remunerative crop to-day. The introduction of a seed that will ow a more rugged plant, or fixing a different season for planting, may lace this important staple under certain and successful conditions. s it is, however, manufacturers are frequently compelled to buy largely om Mazatlan and Acapulco, and in some instances from New York. uadalajara, the capital of this State, situated about 250 miles inland, p on the elevated plateaus, is also a purchaser away from home.

Cotton culture is a comparatively new industry in Acapulco, which lace a century ago was the great commercial center of the Pacific ast of Mexico.

MANUFACTURING DATA.

There are four cotton factories in this consular district; two at Tepic d two at Santiago. At Tepic is the Jauja, owned by the well-known use of Barron, Forbes & Co. of that place. It is situated on the out- irts of the town. It operates 5,000 ring spindles, and employs 350 nds. This factory has just been supplied with a complete new outfit machinery, all purchased in England.

The total output for 1883 was 98,000 pieces of 32 varas each, making 36,000 varas.* The other is called Bella Vista, situated 5 miles from rn, and is owned by Aguirre & Co. This thrifty establishment is rating 4,000 ring spindles and employs 300 hands. They have just plemented their old machinery by a new entire outfit of modern erican invention, lately purchased in the Eastern States. Their duct equals that of Jauja.

The two smaller factories in the town of Santiago are named La brica de Santiago and La Fabrica del Rio. The former runs 512 d spindle frames, employing 40 hands, with a yearly output of 10,500 ces of 30 varas each. The latter has an equal number of ring spin- s, employs the same number of hands, with an equal annual yield.

Wages are less than those paid to similar operatives in the United tes, and children are largely utilized, there being no enforced legal trictions.

The entire product of these mills, as well as others in this republic, l sale for all they make at home—not a yard is sent out of the country. Raw cotton delivered at either of these factories will average about 18 nts per pound clear, or 5 cents per pound in the seed. The class cor- ponds with our low middlings. The staple is strong and fine, but ceedingly carelessly handled in picking, baling, and sending to market. They manufacture nothing resembling our fine muslins at all. Their oducts are, Lona, a loosely-woven coarse article about the weight of our ck. It costs from 14 to 16 cents per vara at the mill wholesale, and tails from 25 to 28 cents per vara. The duty on anything we make nich resembles this class of goods is 11 cents a meter, equal to about cents a yard. The other class is called Manta, which closely resem- es our heavy unbleached muslin. This costs at the mill wholesale

*A Mexican vara is 33 American inches, and there is a permanent discount on Mex- an dollars of from 14 to 16 per cent. in buying exchange.

from 10 to 12½ cents per vara, and retails at from 12½ to 15¾ cents per vara. The duty on this kind of goods made in the United States is 9.40 cents a meter, equal to about 8.50 cents per yard of our measure

THE COTTON-GOODS TRADE OF MEXICO.

All the finer grades of cotton fabrics are imported from England France, Germany, and the United States; the principal part comes from the former, while the latter furnishes the least. This unequal division is not owing to the inferiority of our manufacture; on the contrary, its superiority among consumers is universally admitted; but the entire mercantile community, as far as my observation goes in this consular district, are foreigners, with foreign alliances of long standing. They naturally patronize their own countrymen, as Americans do theirs; but greater than all these considerations, however, are the subtle foreign prejudices existing against American intervention in this great undeveloped commercial field. Many of the wiser ones plainly "see the handwriting on the wall," and are commencing to order from the United States; others will continue the present fight to the bitter end. The time has arrived at last when we should understand ourselves.

We have been largely prevented from competition in a contest where we had the natural right of a fair hearing, and the geographical advantage of closer proximity.

That day has passed; we should no longer cater to our commercial enemies. It is honorable and manly now to openly assert that we enter the field to stay, as competitors for a fair share of the profits of the imports and exports of our neighboring sister republic.

Our sailing vessels and steamships are now, and our railroads in thirty days will be, carrying the commercial treasures of the United States through the very center of the sister republic, and offering them for exchange at their national capital.

HOW TO ENLARGE OUR TRADE IN MEXICO.

All the great common carriers before mentioned know very well that they increase their earnings as our commerce extends; therefore, in the present competitive business race they have to contribute their share in the direction of fares and freights.

British vs. American freight charges.—For example: two barks arrived at this port last December. One sailed under the British flag from Newport, Wales, laden with steel rails, a very undesirable cargo; the other sailed under the American flag from New York, laden with engine machinery and railroad supplies; stowed with loose coal. The latter received $5 per ton more than the former.

I am of course glad to see our merchant marine obtain good charters and earn large profits for their owners in these days of trial for American shipping; nevertheless, I am constrained to call attention to this one fact which came under my official knowledge, and which I need not say in connection with present controversy is not the way to help.

In conclusion, it is simple justice to state that there are three very important factors underlying this whole question, namely:

First. A reciprocity treaty between the two republics should be agreed upon.

Second. Cheaper transportation.

Third. Cheaper telegraphic facilities.

Beyond this, our manufacturers at home, not only of the textile fabrics

but of every other thing to be introduced into this country, must also distinctly understand, if they really want this trade, that they must establish themselves here in some shape. They must do away with thirty and sixty days' credit and conform more for awhile to the old methods of the country, viz, longer credits and larger profits, and last, but not least, they must cause to be taught in every public school throughout the United States a knowledge of the Spanish language

These few easily accomplished prerequisites inaugurated, with cheap water, railroad, and telegraphic facilities at hand, the European trader involuntarily becomes an enforced purchaser of American products; otherwise his inevitable retirement from the commerical field of Mexico is simply a question of time, dependent solely upon the length of purse.

RICHARD LAMBERT.
Consul.

UNITED STATES CONSULATE,
San Blas, February 20, 1884.

TANEKAHA BARK OF NEW ZEALAND.

REPORT BY CONSUL GRIFFIN, OF AUCKLAND.

Tanekaha bark is a product peculiar to New Zealand. It is found in no other country in the world. During the last few years considerable quantities of it have been exported to Europe, where it is highly prized on account of its superior dyeing and tanning properties. Recent tests have established the fact that it is one of the best vegetable dyes in the world, and especially for yellow, pink, and fawn colors. The tree producing the bark belongs to the genus *Phyllocladus*, comprising the trees known as the "celery-leaved pines." It belongs to the same section of the conifers as the well-known yew of Europe and North America, although it differs widely from it in habit and appearance. Only five species of the genus *Phyllocladus* are known to exist. Three of these are peculiar to New Zealand, and one is a native of Tasmania, and the other inhabits the mountains of the great island of Borneo. The New Zealand species are as follows: 1st. The *Phyllocladus trichomanoides*, the tanekaha of the Maoris. 2d. *Poyllocladus glauca*, or toa-toa. 3d. *Phyllocladus Alpina*, mountain tanekaha. The two species found outside of New Zealand are but little known, and are not applied to any economic purposes. The Tasmanian plant is the *Phyllocladus rhomboidalis*, and is plentiful in the hilly parts of that island, forming a tree about 40 or 50 feet in height. The species in Borneo is called *Phyllocladus hypophylla*. It rarely attains a greater height than 20 feet, and only grows at considerable distance on the mountains.

THE TANEKAHA TREE.

The tanekaha is a very beautiful tree. It attains a height of 60 to 70 feet and the trunk is from 2 to 3 feet in diameter. The timber from this tree is remarkable for its strength and durability. It is very close in the grain and is of a reddish-white color. It is especially adapted for piles, sleepers, planking, &c. It is also used for spars and masts for small vessels, but is too heavy for large ones. The tree has a very peculiar appearance and when once seen cannot easily be forgotten. It throws out its small thin branches with wonderful regularity, almost at right angles *with the trunk. The foliage* consists of coriaceous, obovate,

toothed phyllodia, so nearly resembling leaves that they are often mistaken for them. In other words, the so-called leaves of the tanekaha tree, and indeed of all the adult species of the *Phyllocladus*, are composed of the flattened and expanded branchlets of the tree growing together. The true leaves are seen only on the seedling plants and are linear and sharply pointed, but these soon drop off and their places are taken by the flattened branchlets above referred to, which are expanded horizontally and are variously lobed. In some species the flowers grow from out of the phyllodia, showing that they are not simple bodies, but in such cases consist of leaves and stems combined—inflorescence and flowers of the same nature as in *Dacrydium*, except that the flowers of these are often clustered together and sunk in fleshy peduncles.* The tanekaha tree is a very common one in New Zealand, and is scattered all through the northern part of the North Island as far south as Lake Taupo, in latitude 39° south, and from thence more sparingly to Cook Strait, attaining its southern limit in the province of Nelson. An interesting fact connected with this tree is that it will make one of the most beautiful walking sticks in the world. The method pursued by bushmen is to bruise the bark of the sapling at regular intervals and after a few days cut the sapling down and peel off the bark. The stick then presents a beautiful mottled surface, altogether unique, and of a bright red and white color, which will always remain. The peculiar color of the wood and the frequency of the knots, caused by the growth of the numerous branches, and the large percentage of tannin contained in the bark, help to form these distinguishing and variegated characteristics.

THE BARK AND ITS USES.

The bark of the tanekaha has a smooth surface, and is of a brownish gray color, something like the hickory of North America, but is not so smooth and glossy.

My attention was first directed to tanekaha bark in the autumn of 1882, when I found a large quantity of it lying on the Queen street wharf in Auckland, awaiting shipment. Upon inquiry, I learned that it has been an article of export in limited quantities for many years. I at once addressed a letter to Dr. James Hector, of the Colonial Museum at Wellington, with the view of acquiring such information as he might possess in regard to it. Dr. Hector informed me that the bark was a very valuable dyestuff, but that the tree was rarely met with in the south. He said, however, that if I would send him a sample of the bark grown in the province of Auckland, he would forward me an analysis of it. A sample was procured, and its receipt was acknowledged in the following report from Mr. Skey, the New Zealand government analysist:

NEW ZEALAND GEOLOGICAL SURVEY LABORATORY,
Wellington, June 8, 1883.

[Result of analysis of specimen No. 3498, forwarded by G. W. Griffin, United States consul at Auckland. Received 30th May, 1883.]

The dry bark contains 28.66 per cent. of tanning matters, principally catechi and allied acids, tannic acids forming the remaining portions. It is a good dyeing bark for yellow pink and fawn colors, and is held in high esteem in commerce as a fast dye.

G. W. SKEY.

* See Hooker's Flora.

I was surprised at the large amount of tannin contained in the bark, and concluded to prepare without any delay a report upon it for the Department of State, that the information might be communicated to the leather and glove manufacturers in the United States.

Mr. Edgar, of Auckland, who is practically acquainted with its uses as a dye, says it is especially desirable for coloring basils, a saddle-cloth with fine leather on one side and wool on the other. Mr. Edgar, however, says that it is very difficult to prepare the bark for a dye-stuff here, as it has to be rasped before it can be used, and no machinery has been employed for that purpose in the colony. The bark is also said to have no superior as an organic mordant. The astringents classed as organic mordants are preferred to other astringents, because the tannin which they contain is accompanied by very little coloring matter. Tannin, when pure, consists of a whitish powder, and dissolves readily in water and has a sharp astringent taste.

A few years ago an analysis of some of the barks of New Zealand was made at the instance of Sir Julius Vogel. They were tested against those imported into the colony for tanning purposes from Victoria and South Australia. The subjoined table shows the quantity of tannin in the several barks operated upon:

Amount of tannin in various barks.

Nature of bark.	Percentage of water as received.	Percentage of tannin.	
		In normal bark.	In dry bark.
Fagus fusca (Black birch)	10.59	6.9	7.62
Dacrydium cupressinum (Rimu)	11.21	3.8	4.31
Metrosideros robustus (Rata)	15.87	15.2	18.56
Elaeocarpus dentatus (Hinau)	12.15	19.12	21.76
Acacia decurrens (Black wattle)	9.90	25.8	28.32

The rimu and black birch were samples taken from a large quantity of bark ground for use in Messrs. Guilford & Co.'s tannery. The rata is of the so-called "sugar-loaf" variety. The black wattle is grown in Adelaide, and is from a bulk of 150 tons at that time lying at the tannery yard.

It will be seen from the above table that the black wattle yielded a much larger percentage of tannin than any other, but even that celebrated bark is not equal to the tanekaha, and it may well be doubted if there is any other substance in the vegetable kingdom yielding so large a percentage of tannin. The highest yield of tannin is found in galls, or gall-nuts, hard, woody excresences formed by an insect on the twigs of the dwarf oak (*Quercus infectoria*) of Syria and Asia Minor, and varying in size from a pea to a nutmeg. According to an analysis of Guibord the yield of tannic acid from galls is 65 per cent.

The following is a detailed statement of the component parts of gall-nuts: Tannic acid, 65; gallic acid, 2; ellagic and lutes-gallic acid, brown extractive substance, 2.5; gum, 2.5; starch, 2; sugar, 1.3; chlorophyl and volatile oil, 0.7; woody fiber, 10.5; water, 11.15. The principal sources of tannin, however, are from the bark of trees.

For a long time it was supposed that the oak bark was the only sort suitable for yielding tannin, but now the list of barks producing tannin is a very long one, and, moreover, a great variety of other vegetable substances are used, either alone or as an adjunct to the oak bark. The

bark of the hemlock, the *Abies canadensis* of science, is one of the ch sources of tannin in the United States. About 100,000 barrels of he lock-bark extract are annually produced in America, and of this quant a Boston firm alone manufactures 72,000 barrels. The tanneries in United States consume annually 1,250,000 cords of hemlock bark, wh is produced in nine States. As the yield of this bark is about 7 co to an acre, the yearly consumption implies a clearing of 178,000 ac The bark is usually stripped from the trees cut for timber, and as demand for hemlock timber exceeds the supply, both timber and b will soon become exhausted.

The American chestnut is also very largely used in the United Sta for tanning purposes, and is said, on the authority of Dr. Camp Morfit, to produce a tannin that will render leather far more solid flexible than that prepared with oak.

I am indebted to the Commissioner of Agriculture at Washington the following table, showing the results of the analysis of a large n ber of vegetable substances containing tannin, prepared for the In national Exhibition at Philadelphia:

A table showing the results of the analysis of various vegetable substances containing ta prepared for the International Exhibition at Philadelphia, together with the names o places from which they were obtained.

	Per of ta
Ground sumac (mixed), from Winchester, Va	
Sumac (*Rhus cotinus*), Hallsborough, Va	
Sumac (*Rhus glabra*), Georgetown, D. C	
Leaves of sweet fern (*Comptonia asplenifolia*), from near Boston, Mass	
Leaves of *Polygonum amphibium*, from Nebraska	1
Ephedra antisyphilitica, from table-lands of Arizona and Utah	1
Bark of sweet-gum (*Liquidambar styraciflua*), from District of Columbia	
Bark of red oak (*Quercus rubra*), from Canton, Ill	
Bark of white oak (*Quercus alba*), from Canton, Ill	
Crushed quercitron bark (*Quercus nigra*), from Winchester, Va	
Bark of *Quercus coccinea*, from Canton, Ill	
Bark of *Quercus macrocarpa*, from Canton, Ill	
Bark of hemlock (*Abies canadensis*), from Van Ettenville, N. Y	

Of the above barks the sumac (*Rhus glabra*) yielded the largest centage of tannin. It is used principally as a mordant for red col and is said to be an excellent febrifuge. The tanekaha bark has been known to the Maoris as a valuable dyeing material. They it extensively in coloring their cloth, flax mats, and basket-ware, prefer it now to any other brown and yellow dye.

GATHERING AND SHIPPING TANEKAHA BARK.

The bark is principally gathered by the Dutch settlers at Puhoi, Mahurangi, and by the natives on their own land at Hokianga, Bay Islands, Mangonut, &c. They strip the tree of its bark by maki transverse cut with a tomahawk around the trunk of the tree at bottom, and a similar cut just below the junction of the branches. then make vertical incisions with a keen knife, and remove the ba long, narrow strips. The branches large enough to contain bark of value are stripped in the same way. The tree, if not too large, is erally cut down and the bark is removed more easily; it is no use t to save the tree, as removing the bark invariably kills it. The ta is deposited by the sap principally in the inner portion of the o bark, and the outer portion of the inner bark, or liber. It is the cus here to gather the bark in the winter. It should, however, be colle

in the spring, for the tannin is the most abundant at the time of the greatest flow of sap, which always occurs at that season. The reason for gathering the bark in the winter is that farmers and bushmen have more leisure for such work at that time than any other.

The bark, after it is pulled off, is carted in bulk to a settlement, where it is put up in bundles from 4 to 5 feet in length and shipped to Auckland, and from thence reshipped to London. As it is bulky it is usually shipped as dunnage; consequently, vessels seldom take it from more than one firm, so that in cleaning out the hold of the ship after removing the cargo there will be no trouble in separating it. The freight in this way costs only about $16 per ton to London. If the bark were properly rasped, pressed, and shipped in bales it would command a much higher price, and give far more satisfaction to the manufacturers than the present mode of shipment, as it would then be ready for use.

Several American machines, among those one by Mr. F. Gayton Clarke, of Saint Augustine, Fla., have recently been invented for disintegrating bark, which could very advantageously be introduced here.

DESTINATION AND PRICE.

Nearly all this bark, sooner or later, finds its way to Grenoble in the south of France, where it is used for the purpose of coloring kid gloves. Grenoble is said to be the largest manufacturing center for kid gloves in the world.

The price of tanekaha bark in Auckland is usually about $40 per ton. The price in London is fluctuating, and varies from $150 to $250 per ton. This fluctuation is said to be occasioned by the demand for the particular kind or shade of kid gloves which the bark is employed to color.

The French are said to possess a higher degree of skill in the art of leather dyeing than the people of any other country. It is certain that the best and neatest fitting kid gloves imported into Australasia come from France, where the greatest care is taken in the preparation and coloring of the skins. In order to make them soft, full, and flexible they are dressed with a preparation of wheat flour and egg yolks. The skins are made uniform by shaving any part of them that is thicker than another with a sharp instrument. The leather is next examined for imperfections, and if a flaw is found in one of the skins it is laid aside. The cutting has to be done by hand. No machinery has yet been invented for that purpose. Each piece is carefully measured in order to allow the proper stretching space. A Melbourne firm recently made a single purchase at Grenoble of 11,000 dozen skins, to be prepared and colored as wanted for the Australasian market.

ITS CULTIVATION IN THE UNITED STATES.

The tanekaha tree is one of the most beautiful trees in the world, and for that reason is highly prized as an ornamental tree for parks and gardens. It does not readily bear transplanting, and, like nearly all New Zealand forest trees, begins to die as soon as the undergrowth and surrounding bush are cut away. It will, however, grow very well from the seed by sowing, and could easily be acclimatized and especially in the States on the Pacific coast of the United States and also along the Gulf of Mexico in Florida, Alabama, Mississippi, Louisiana, and Texas, and in Georgia, South Carolina, and other southern States of the Union. The tree thrives well both on dry alluvial lands on heavy loams and also in light soils of hill-sides.

NEW ZEALAND TANNERIES.

There are 119 fellmongery, tanning, and currying establishments in New Zealand. Of these, 12 are located in Auckland, 34 in Canterbury, 29 in Otago, 2 in Taranaki, 12 in Wellington, 19 in Hawkes Bay, 6 in Marlborough, 4 in Nelson, and 3 in Westland. The tanning material is chiefly imported from Victoria and Tasmania, and some little from Fiji and London. The New Zealand tanneries turned out last year 20,619 hides, 41,877 skins, 60,642 basils, 112,011 sides, and 15,000 kips and pelts.

The tanneries in Auckland are conducted upon a much more extensive scale than in any other part of the colony. The 112,011 sides produced last year were alone the product of Auckland. Auckland also furnishes about one-third of the pelts prepared in the colony. In 1879 these tanneries imported 1,729 tons of bark, valued at $77,910. In 1880 the imports were 2,783 tons, valued at $112,931. In 1881 the imports of bark increased to 3,257 tons, valued at $176,905, and in 1882 they were 3,495 tons, of the value of $185,410.

EXPORT OF TANEKAHA BARK.

The first shipment of tanekaha bark from Auckland occurred in 1873, when 24 tons were exported. It did not, however, attract much attention and was not followed by a single shipment in 1874. In 1876 the extent of the export was 58 tons. In 1879 the amount rose to 149, but declined in 1881 to only a single ton. In 1882 the amount rose to 52 tons, and during the first six months of the present year the quantity exported was 375 tons valued at $15,375 (fifteen thousand three hundred and seventy-five dollars). Of this quantity, 24 tons were sent to New York.

The subjoined table shows the quantity and value of tanekaha bark exported from New Zealand since 1873:

A table showing the quantity and value of the tanekaha bark exported from the colony of New Zealand for each year from 1873 *to* 1882, *inclusive, and for the first six months of* 1883.

Year.	Quantity.	Value.
	Tons.	
1873	24	£1,245
1874	Nil	Nil.
1875	7	200
1876	58	1,500
1877	19	775
1878	49	1,470
1879	149	6,380
1880	120	3,530
1881	1	40
1882	52	1,725
To 31st July, 1883	375	15,375
	854	£34,770

It will be seen from the preceding table that the quantity exported during the present year is almost equal to the combined exports of all the preceding years since 1873.

DIFFERENT SPECIES OF THE PHYLLOCLADUS.

The other New Zealand species of the Phyllocladus, like those of Tasmania and Borneo, are not used for economic purposes. The toa-toa

(*Phyllocladus glauca*) although a smaller, is, if possible, a much more beautiful tree than the tanekaha (*Phyllocladus tricomanoides*). It rarely attains a height of more than 40 feet, with a trunk diameter of 18 inches. Its leaves, however, are much larger, and its mode of growth much more striking and luxuriant. Its timber is somewhat similar to that of the tanekaha, but is not used on account of its small size. It is found occasionally in sheltered places from Hokianga to Lake Taupo, in the North Island, but is nowhere very plentiful, and has not been observed further south than the thirty-ninth parallel. I have had some of the dry bark analyzed, which yielded 23 per cent. of tannin.

The third species of this tree, the *Phyllocladus Alpina*, is very much smaller than the others and more like a shrub than a tree. It varies in height from 8 to 25 feet, according to situation. Its trunk never exceeds 12 inches in diameter. Its small size prevents any use being made of the timber, which, however, is tough and durable. It is a mountain plant, rarely descending into lowland districts, and is found in various parts of the North Island, south of Lake Taupo, and is abundant in the Middle or South Island, and especially in the subalpine forests of Nelson and Canterbury. No analysis of the bark of this species of the *Phyllocladus* has yet been made.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Auckland, October 3, 1883.

TRADE AND INDUSTRIES OF GHENT.

REPORT BY CONSUL POLACHEK, OF GHENT.

The great industries of Ghent have passed a very satisfactory year, particularly the cotton and flax trade. The productions, however, could not so easily be disposed of as in former years, as a strong competition makes itself hereabout more felt with every day, especially since the industries of the surrounding countries are progressing to such a large extent; yet, the manufacturers here have shown an energy aided with long practice and experience, also with gradual adoption of all improvements in machinery, &c., which alone has enabled them to reap a fair success against such competition.

COTTON MANUFACTURES.

Spinning.—The cotton trade, almost the only staple trade of Ghent, still maintains a very high position amongst those of the country. Its most formidable rival is England. It does not possess, like the latter, an economical and very powerful organization, an improved division of labor, the facility of supplying itself with the raw material, an immense colonial market, and an admirable commercial system. These powerful elements are all wanting. But, such as it is, it labors manfully to overcome the weakness of its situation.

What constitutes the commercial strength of English industry is the practice, almost universally adopted, of dealing with commission houses. This system is well known: The commission houses accept all the goods manufactured at the establishments they are connected with and sell the same on their own account. It follows, therefore, that the manu-

facturers have no other care, but that they get the largest yield from the labor of production; consequently they economize the interest of the stockholders.

These advantages may be summed up as follows:

1. The cost per spindle in their spinneries is almost one-quarter less than that fitted up and worked in Ghent.

2. The English commercial organizations permit the manufacturer to pay close attention to their factories. As soon as produced they deliver their goods to the commission houses, who allow them the current rates of the day. The English manufacturers have, therefore, no need of as large working capital as those in Ghent.

3. The immense market open to the English spinners enables them to produce a single series of fabrics, which is impossible here for the reason our manufacturers are obliged to use the cotton as shipped, and use the same for different grades, in order to consume all the raw material. This gives the English manufacturers a very large advantage in producing cheap fabrics.

4. The fuel necessary to the production of power is much more expensive in Ghent than in England.

It is sufficient to enumerate these advantages which English manufacturers enjoy, as it is not my intention to enter also into a detailed examination or comparison as regards our increased duties, &c., which I think would be out of place in this report.

However, the past year ends the crisis which has been felt here for a very long time in the cotton trade, and the manufacturers expect, and confidently express the certainty of, great improvements in the near future.

The sale of yarns and all other manufactured goods has been regular, and owing to the decrease in the price of raw material, and in spite of the above detailed disadvantages, the manufacturers have been enabled to sell all their productions at fair and very remunerative figures.

It is impossible to ascertain the exact quantity of raw cotton used here, as there are no official statistics published, and only after diligent and persistent personal inquiries at the factories, I have the figures which enable me to say that there were not less than 15,000 tons of cotton used during the year of 1883.

Wearing.—The year of 1883 has brought no improvement in this department. On the contrary, what little motion it had formerly has been lately impeded by the new French customs tariff. The almost prohibitive duties render all attempts in this line futile.

The weavers of Ghent are therefore entirely cut off from the other European markets, not only for the reasons mentioned, but mainly for the reason that the other European weavers have adopted improvements, thereby lessening the cost of goods, which the weavers here are slow in perceiving, and, owing to that strong competition, this branch here is evidently destined to supply only the very small demand for home consumption.

FLAX MANUFACTURES.

Spinning.—The flax trade has been particularly prosperous during the past year on account of the low price of raw material.

Flax-spinning has especially profited by this, as Russian flax has been very low, which facilitated the sale of such yarns.

All manufactured yarns have been sold with rapidity, and since the month of August the stocks manufactured during the preceding years

·e been disposed of; so, taking it altogether, this industry has been y remunerative during the year.

Veaving.—The prospects in linen-weaving have not changed. The ·s, as I understood, for numerous reasons, were always very insig- cant, and are daily becoming more so.

JUTE MANUFACTURES.

'he manufacturing of jute yarns is promising to play an important t in the textile industry.

.t its introduction in this country such yarns were used only in man- cturing sackcloth and canvas. Lately it has caused such competi- ı to the coarse linen yarns that its extensive use is the direct cause t factories which were fitted up to work the linen yarns have entirely sed, and were obliged to turn their attention to some other branch industry.

reat progress has been made in the manufacture of jute yarns, ich are said to be extraordinary in quality and appearance. Combed e yarns are specially handsome on account of their brilliancy and even- s, and, as raw material takes to dye so well, it is seen in a variety of rics, and used extensively for furniture covering, curtains, &c.

The demand for such goods has been very active, especially from road, and very fair prices were realized for choice patterns.

SUGAR AND SUGAR-REFINING.

f the cotton and flax trades, when well managed, are able to keep ir place amongst like industries here, it is not so with the sugar de, and notably that of sugar-refining.

understood some few years ago Ghent possessed a great number of ar refineries, but now they have mostly disappeared. One of the prietors of the largest refinery in Ghent having died lately, none ld be found to continue the business, and all the machinery had to old to the junk-dealers.

he importations of sugar were from England, and are believed to e been 5,265 tons of all grades, an increase of 55 tons from 1882.

LUMBER.

hent is one of the most important places in this part of the country he lumber trade. Its topographical situation is well adapted to this merce. The constant building of proper docks, the sheds which rcle these docks, built exclusively for this purpose, and the railway ks which connect most of the lumber yards, are all exceptionally rable to the traffic of a commodity which requires a great deal of n and special handling, more so than in the United States, as the ple hereabouts are slow to adopt any labor-saving machines for dling such bulky merchandise.

1 1882 the importation of timber gave an impetus to the port of nt. During that year 200 vessels laden with timber, registering 97 tons, and 38 vessels laden with logs, registering 9,893 tons, en- d this port.

he lumber merchants were deceived in their hope that the year 1883 ld be a profitable one for their business; they contracted for large ortations from Swedish and Russian ports, relying on a large de-

mandfor the projected public improvements; but unfortunately these have been temporarily deferred, and their large stock remains largely unsold. Naturally the supply exceeded the demand, a decline in the price took place, which brings a considerable loss to those who handle that article.

SHIPPING AND PORT IMPROVEMENTS.

The year 1883 shows an increase over the former in the arrival of sailing vessels, yet with a decrease in the arrivals of steamers, which is the contrary of preceding years.

These are the figures:

		Tons.
Sailing vessels entered in 1883	302	65, 499
Sailing vessels entered in 1882	232	47, 477
Increase in 1883	70	18, 022
Steamers entered in 1883	403	184, 213
Steamers entered in 1882	419	189, 814
Decrease in 1883	16	5, 601

The arrivals of vessels with lumber and logs show an excess of 83 vessels and 22,772 tons of the previous year.

Russian flax has employed 21 vessels representing 7,238 tons, against 30 vessels representing 9,115 tons in 1882. The difference arises mostly that, owing to the very low freight charges by railroads, flax was largely imported by rail.

As to exportations, the shipments of full cargoes of certain goods are very rare. What little is exported is carried by the regular steamers, which forward them and return with goods landed at the nearest seaport.

The arrivals of barges from Holland show also a decrease, 528 barges, representing 45,343 tons have arrived, which is a decrease of 68 barges with 6,119 tons from 1882.

The works of the outer port and of the new locks at Sas de Gand are progressing steadily, and it may be confidently expected that these will be finished about the time fixed upon, May, 1884.

The district authorities appointed a committee to examine the grounds and the arrangements of the principal English, Dutch, and French ports. This committee had to make its report, which should embrace all recommendations, in the month of October, 1883. I could, however, not ascertain if it hadd one so.

The foundations for the superstructure of the quays at the outer port have been commenced, and doubtless will be finished in time to allow them to begin to work on the main structure of the quays proper; then the main canal will only require a little more dredging, and it may be reasonably expected that by spring of 1885 we shall see the port of Ghent ready to receive large ships with ease and security.

It is only when these hopes will be realized that a decided impulsion to the commerce and direct importation and exportation may be expected in this city, as at present all attempts at expansion of trade come to grief against that fatal "non possumus."

The construction of "dry docks" was to have gone hand in hand with the works at the outer port, and it appears however, that the plans have been for a long time, and are yet only under consideration.

The complaints addressed to the Government against the speed which steamers were allowed to make on the canal has had a beneficial result, as they are permitted to navigate at present at the rate of 10 kilome-

ɔur, which is a great improvement on the old antiquated rule
eters per hour.
ire to have the obstructive "custom declarations" necessary
e at the Selzaete office (which is the frontier of Belgium)
has not been realized yet; when, however, the larger vessels
this port, it will be then a question of imposing a hindrance
s prejudicial as it is useless.
stion of abolishing light and beacon dues, and also the pilot
fore the house of representatives, but it cannot be foreseen
ɔsition will be made on this matter.
ɔther hand, the Government does not seem disposed to listen
ıy requests that have been made to establish uniform charges
ıses of all railways which center in Ghent, a measure which
very much by all shippers.

RABBIT SKINS AND HAIR.

the prosperous industries of the city of Ghent may be cited
ssing and dyeing of rabbit-skins. These goods are in a very
ınd by the furriers and hat manufacturers; the rabbit hair is
ıe manufacture of felt hats.
orts in 1882 were very large, and have considerably increased
The principal markets, besides Europe, are the United States,
ıd Australia. Orders from France have on account of the in-
uty on such furs materially decreased. The supply of rabbit
adequate to the steady demand of same.

CHEMICAL MANURES.

mical manure trade is one of very great importance in this
country, but has lately suffered a great deal on account of the
ancial resources of the farmers, as the prices of all their pro-
have very low, and mostly for that reason chemical manure has
ally abandoned in favor of nitrate of soda, which has been
per this year than in any previous year, owing to the very
; charges and the large quantities which have been imported.
l consumption of nitrate of soda was 14,000 tons in 1882, and
over 20,000 tons for the first six months of 1883 alone. In
ction it may be observed that the cultivation of wheat, which
ıe largest quantity of manure, has notably diminished, by
the competition of foreign wheat, mainly American, which is
n increasing quantities. It is evident that before long the
ı of wheat will cease to be remunerative, and doubtless will
ame fate as the cultivation of flax—which has totally disap-
m certain agricultural districts.
phosphates remain firm, especially the Belgian phosphates,
in great demand for home consumption, also for exportation,
ısily hold their advanced price until there may be some new
ı to replace these also.

CEREAL TRADE.

rade.—The cereal trade, especially wheat, was entirely de-
n the American market. Advices from New York and Chi-
ınced the market here, and these were followed by the fluctu-
hese named markets.

When the first new wheat arrived from the United States it was quoted at $5.80 per 100 kilograms. It fell $0.80 in less than one month; was quoted at $4.70 in October; since then it has risen between 35 and 40 cents.

The millers hereabouts have a decided preference for American red winter wheat, and they willingly pay a little more for such.

Indian wheat, being very low, remains firm, and has not varied more than 50 cents during the last ten months. Grain which is imported from that country is not very popular, and, as I understood, not much used, with the exception of the *Kurachee* wheat, which the millers think compares very favorably with the American wheat.

The result of the Belgian crops is above the average of past years, and would have been extraordinarily favorable if persistent rains would not have retarded the harvests. This explains the cause of the large imports which took place during the past six months.

The demand for Belgian rye has been somewhat brisker than last year. The largest part of good rye is used in the distilleries of this country, whilst the inferior qualities are held for exportation. The price of rye has fluctuated very largely. Last year Belgian rye was sold at from $4.20 to $4.50. The new crop this year brought $4, and is quoted at present at $3.30.

Indian corn has been very little imported from the United States; the largest part came from La Plata. Considerable corn has been formerly used for distillation, but on account of some changes in the tax law relative to the manufacturing of gin, for which corn was used only, it has been abandoned lately, and is used as food for cattle mainly.

The imports of oats and barley have increased very largely since last year. They are imported from Russia and the Danubian provinces; and it is said here that the crops there have been superior both as regards the quality and the quantity, and brought better prices than in former years.

Flour trade.—There was a time when this market drew all its supplies of flour from the producing regions of Europe alone. Southern Russia was its granary and the Black Sea was constantly plowed with ships laden with flour and grains. Now, everything is changed, as America, and notably the United States, has added her immense fields to the supply of Europe, and the people hereabouts are very confident that America can now furnish such quantities of breadstuff that Europe never need fear of a famine or even a scant supply.

In previous years they have used here flour from Indian wheat, but the importation of such is on a steady decline, as the quality suffers largely by comparison with American flour.

The imports this year have been considerably larger than in former years, but it is an impossibility to ascertain even the estimated quantity.

Rice.—The steady increased demand of this cereal makes it an important item to be quoted, as to the quantity which has been used in this city and vicinity, and in consequence of such demand, prices were very firm, with the inclination of a slight advance.

The Terneusen Canal not being finished, the importation is largely by way of Antwerp, and the figures are as follows: 34,582 sacks, weighing 3,353,732 kilograms, besides the following quantity which has been imported via London, Hamburg, and Bremen, also from some Holland ports, were as follows: 6,380 sacks, weighing 638,000 kilograms, making a total of imports in 1883 of 40,972 sacks, weighing 3,991,732 kilograms.

Oleaginous seeds.—An alleged new article in manufacturing oils, and of which the imports have been very large during the past year, are Indian

groundnuts. The manufacturers have lately familiarized themselves with that artircle, and they claim that these nuts yield an excellent quality of oil for almost every purpose. The material, or rather these nuts, was imported already ground, mainly from Bombay and Madras, and quoted here at $6.05 to $6.15 per 100 kilograms.

I shall at some future time make a closer observation of the above, and report to the Department.

Rags and paper stock.—This place, it seems, is a great center where such stock is prepared, especially for paper-makers' use, and is largely exported to other European countries, and also to the United States.

I could not ascertain the quantities exported to different parts of Europe; but, according to the consular books, the exports from here to the United States amounted to the value of 781,476.49 francs in 1883.

Machinery.—The only important branch which may be noted here is the manufacture of steam-engines and locomotives; and although not built with any exterior beauty, still may be models of solidity, as the Belgians are boasting of these. To an American used to see the elegance, lightness, and easy working of our locomotives and all other engines, it occurs to me there is room for great improvement in this line, if not in their wear, at least in their form, elegance of motion, and appearance; and I believe if seen here that it would be an easy matter to receive the acknowledgment that our manufactures are surely equally as good, and a great deal more artistic workmanship displayed in these than in anything I have seen so far.

Gas.—I may be permitted to mention this branch and give it a place among the industries of this city, mainly to show how things are done here.

The company which formerly supplied gas in this city has done what all corporations are apt to do—charged a very high price for gas. The people, and even the authorities, requested a reduction, knowing that the company were realizing large profits on their investments; but the company felt themselves secure in their imaginary fortifications, refused any material concession; so a few wealthy capitalists were obliged to form a new company; and after the usual struggle which it takes to replace a wealthy corporation in Europe, these have finally succeeded, built their gas-works, and have laid pipes in every street, which is a very difficult matter here, as all the streets have not only a solid foundation, but have also an excellent stone pavement, and the old company is obliged to take their pipes out of the ground, as they are not allowed to furnish gas at any price. The large loss which the old company has sustained is a great gain for the people at large, as they not only get gas for less than $1 per 1,000 cubic feet, but the city authorities make daily official tests of its illuminating power, and it is superior by over 5 per cent. than the contract exacts from them, and gas is superior in Ghent than in Paris or Brussels.

All this in the face where an inferior soft coal is only used and costs from 35 to 40 francs per 1,000 kilograms, which is more than $4 per ton in large quantities.

The public appreciate these facts, as gas is used to a large extent for manufacturing purposes, heating houses, and lately the gas company has even gone so far as to add one department where fixtures, heating apparatus, and even cooking stoves are hired out per month for an exceedingly small consideration, in order to facilitate the use of gas and bring it within the reach of the poorer classes.

TRADE BETWEEN GHENT AND THE UNITED STATES.

I have observed during my short sojourn here that a general belief prevails here "that foreign goods must be superior to home manufactures," and acting on this presumption there is room here for introduction of many articles actually superiorly manufactured in the United States.

Of the articles which will find a ready market here I shall only enumerate such as have been pointed out to me by merchants whose integrity I can implicitly rely on, namely, flour of all grades; canned meats and fruits, especially canned poultry; cotton of all qualities; paints and oils; enameled paints; agricultural implements; small hardware, such as locks, keys, household hardware; extracts; and patent medicines; and all labor-saving machines will find a ready sale at this place; and its very populous vicinity.

The articles which could be very profitably exported from here—some of these are already largely exported—are, mainly, paper-makers' stock, which is very extensively prepared here; furs of certain kinds; rabbit hair for hat manufacturers; flax; and seeds; some very elegantly and elaborately carved furniture, the latter a very large industry here, and the goods very artistic.

In this connection I must specially invite the attention of horticulturists and florists in the United States to the fact that horticulture and floriculture are brought almost to perfection in Ghent. The nearly five hundred hot-houses here are resplendent with flowers, and even tropical plants. These are surely not cultivated for the sole pleasure of their owners, and a great part of Europe seek their supply here; and the question arises, "Could not some of our enterprising merchants find it to their interest to open business connections here?"

SAMPLE ROOM FOR AMERICAN GOODS.

In order to facilitate and probably open new business channels with the manufacturers and merchants in the United States, I will open a "sample room," where I shall invite all those who may desire an extension of their business to send to this consulate, "free of expense," samples, drawings, &c., of their goods, so that I can invite the merchants of this vicinity to examine such samples as may be in my possession, and it may possibly become a starting point which will lead to large business connections. The room I shall assign for this purpose is adjoining the consular office, and either the consul or vice-consul, when not officially engaged, will be pleased to give all information and explanations in his possession. These goods will be on exhibition during the business hours of the day, and if this, I believe, new enterprise, should be approved by the Department, I would respectfully request that this plan may be brought to public notice, thereby assuring its undoubted success.

MAX POLACHEK,
Consul.

UNITED STATES CONSULATE,
Ghent, January 9, 1884.

n become apparent to any extent.
Within the last months, however, the organization has developed narked activity. Meetings have been held in many places, auxiliary branch societies have been formed and are forming throughout the pire, pamphlets are being printed and circulated, showing the re-ts direct and indirect of intemperance; in short, within the space of ew months this society, which now numbers among its thousands of mbers many of the most prominent statesmen, scholars, authors, rnalists, physicians, and merchants of the land, has by a whole-ne and temperate agitation succeeded in directing the attention of people, the press, and the legislative bodies of the country to this portant subject.
ast month only, on the occasion of the discussion of the budget, mitted to the Prussian House of Representatives on behalf of the eau of education and religious culture, attention was directed to custom of German students to indulge in a "Fruehschoppen," that a matutinal mug, the singular in the appellation standing, however, as many "schoppen" as may conform to the efficiency acquired each particular student in the "art" of drinking. It was suggested a prominent member of the House that while it was well to direct blic attention to this abuse among the students, and while he would dly give his support to any practical scheme to abolish this hurtful bit, yet these young men ought to be judged leniently in view of the t that at a certain morning hour the illustrious House itself showed narked decrease in number, because many of its members, although eral decades removed from their student days, had not yet discarded habit of indulging in the time honored "Fruehschoppen." While s the habit of drinking prevalent at the German universities was in neasure apologized for, yet it was universally conceded that excessive nking is one of the greatest failings of the German nation. The love drinking and carousing is as old as the German nation itself, and while ther's well-known assertion that the Germans had the "drink-devil their belly" may be a little harsh and spoken after the manner of great reformer, who was fond of saying things with a point to them l a few barbs to the point, yet it must be conceded that they are

neglectful. They are pressing the results of this neglect upon the attention of the Governments of Germany by publishing broadcast the stupendous figures which show the expenses, waste, and moral and physical havoc caused by this overindulgence, mainly among the working classes.

"Few states," says Dr. Baer, in his pamphlet on "The vice of drunkenness and the means of reducing the same," "show a greater consumption of alcoholic liquors than Northern Germany; it is exceeded slightly only by Sweden and Denmark, while many other countries which are usually regarded as much addicted to the use of strong alcoholic drinks—Holland, Belgium, England, Norway—consume considerably less."

In the kingdom of Prussia alone the annual consumption of strong alcoholic liquors amounts to from 220,000,000 to 225,000,000 marks, while the amount expended for beverages of all kinds which intoxicate is estimated at from 860,000,000 to 870,000,000 marks; that is to say, nearly twice the amount of all the taxes levied in the kingdom to defray the expenses of the royal and imperial governments combined—468,000,000.

The average annual consumption of ardent spirits in Northern Germany is 10 to 11 liters per head, being equal, according to the estimates, to from 31 to 35 liters for each male drinking person per year. The number of drinking places in Prussia has risen from 119,945 in 1869 to 165,640 in 1880; of these 93,000 were places in which ardent spirits were sold, being one such place to 164 inhabitants. But not only the consumption of ardent spirits, but also that of beer and wine, is increasing throughout Germany, the average consumption of beer in Prussia being 87.6 liters per head annually. The number of persons who became insane in consequence of excessive drinking (delirium tremens) in Prussia, from 1875 to 1879, was 3,453, or 14.84 per cent. of all demented persons. Of 32,837 criminals convicted during the same period, 13,706, or 41 per cent., were ascertained to have committed the crime while under the influence of liquor. Of 4,450 suicides committed during said period, 508 were the result of excessive drinking and delirium. In Northern Germany more than 50 per cent. of all pauperism is due to excessive drinking. What, in view of this fearful showing, asks the organization, is to be done? Forty years ago a strong popular movement was organized to check the vice of drinking, but the storm of the revolution of 1848, which followed soon after, turned the attention of the German Governments and people to other and more immediately pressing subjects. In 1866 the laws regulating taverns and drinking resorts were made more stringent in most of the German States, but the trade-law (Gewerbe-Gesetz) of 1869 adopted by the Imperial Government made inoperative many of the provisions of those laws. Since then the number of drinking places has increased from 70 to 75 per cent., by reason of which profits have decreased, which circumstance again compels dealers in intoxicating drinks to hold out to the public additional inducements. "*Occasio facit fures*," says an old proverb, which, in our case, means that the multiplication of saloons means the increase of drinking. This assertion is borne out by experience.

"Wherever," says the committee on drinking places, appointed by the organization mentioned, "statistical investigation has succeeded in penetrating into the matter, an increase of the number of drinking places shows an increase in the amount of alcoholic liquors consumed; a decrease of the former, on the other hand, a decrease of the latter." It is an assertion which to the theorist may seem paradoxical, but which has been many times practically verified, that in the traffic in intoxicating

drinks the supply regulates the demand, not, as in other lines of commerce, the demand the supply. I will cite one example of the correctness of the proposition just made, which will convince even the most skeptical. Not many years ago Sweden was so fearfully addicted to whisky-drinking that the average consumption of ardent spirits amounted to 43 liters annually per head. The working people of the city of Gothenburg seemed steeped in drunkenness. In consequence thereof, a benevolent society composed of prominent citizens was organized for the special purpose of fighting this great vice and calamity. This was in 1864. They deliberated calmly as to the best methods of reaching the ends of their organization. Finally, they hit upon a plan. They proposed to the authorities to withdraw at one stroke all licenses granted to saloon-keepers and to empower the organization itself with the licensing and regulation of drinking places. The authorities consented. Of the drinking places of Gothenburg more than one-half were closed, and the remaining number controlled and regulated by the organization. Coffee and tea were sold along with intoxicating drinks, reading-rooms established, and yet 160,000 crowns were paid into the city treasury as a result of the first year's work. This Gothenburg organization now encompasses the entire kingdom. To-day the consumption of ardent spirits does not reach 8 liters per head, and crimes hav e decreased 27 per cent. I am far from claiming that the crisis in Gernany is equal to that in Sweden twenty years ago, nor can I bring myself to defend the Gothenburg system in other respects. The principal objection to the Gothenburg society is that it has a monopoly of the entire traffic in intoxicating liquors in the kingdom, and that it is apt to become arbitrary in its decisions and grasping in its methods. In view of these facts, I think the laws lately passed and carried into effect in Holland decidedly preferable. These laws fix the maximum of drinking places in cities, towns, and villages, respectively, according to population. Thus, in a city of 50,000 inhabitants and upwards no more than one drinking place is permitted to each 500 inhabitants; in cities of more than 20,000 and less than 50,000, one drinking place is allowed to each 400 inhabitants; in cities of more than 10,000 and less than 20,000 inhabitants, one drinking place to each 300 inhabitants, and in all smaller places not more than one drinking place to each 250 inhabitants. Such laws, providing in addition for a proper licensing and regulation of the saloons actually in existence, could, in my opinion, be carried out in any civilized country, and would achieve beneficent results.

In Germany, as in many of the States of the Union, the existing laws are entirely inadequate to deal with the evil as it now presents itself. Section 33 of the trade law of 1869 provides that the traffic in intoxicating liquors, either to be drunk on the premises or to be bartered at retail, shall be subject to a permission (license) to be granted by the proper police authorities. This license may be refused where the applicant is not a person of good repute, or where the place selected or owned by him is not properly located or appointed, and finally where the applicant cannot prove the existence of a demand or necessity for the establishment of a new drinking place. Stringent as these requirements seem at first sight, they have not sufficed to check the increase of drinking places in the different German countries. In Prussia, as I have already shown, the number of such places rose from 119,945 in 1869, to 165,640 in 1880; in Bavaria from 24,342 in 1872, to 33,333 in 1877; in Saxony from 11,096 in 1869, to 15,018 in 1877, and so forth; the figures for the states of Bavaria and Saxony not including places where liquors are sold by measure at retail. Even the amendments to

the trade law, increasing the arbitrary power of the local police authorities, have been insufficient to check the constantly growing evil; for what in the end is the amount of evidence required of the applicant to prove the demand or necessity (bedürfniss) for the establishment of an additional saloon or retail liquor store? How can the authorities judge of the existence of such a necessity; and what an excess of arbitrary power is thus given to them? The drift of public opinion, therefore, in Germany is decidedly favorable to the Holland system. The decrease of the number of drinking places in that country since the new laws went into operation is more than 25 per cent., from 40,000 to less than 30,000. A similar decrease in Germany would work inestimable benefit. No impracticable scheme, such as total prohibition, is ever mooted here, nor is it intended to infringe the personal rights of any citizen, nor to interfere with those social habits which are characteristic of the German nation; in other words, no interference is intended with the proper and moderate use of the beverages which exhilarate; but the minds of some of the best private persons and legislators in the country are fully made up that a check shall be put upon the excessive use thereof for the good of those who cannot resist temptation, and of the nation in general.

FERDINAND VOGELER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort-on-the-Main, March 12, 1884.

TURQUOISE MINES AND MANUFACTURE OF "MODERN ANTIQUITIES" IN PERSIA.

REPORT BY MINISTER BENJAMIN, OF TEHERAN.

TURQUOISE AND TURQUOISE MINES.

I have the honor to report that the turquoise market of Persia is just now suffering under the influence of a "corner." This has been for ages one of the important sources of wealth of this country.

There appears to be no historic record of turquoise mining in Persia previous to the tenth century, A. D. But after that the industry seems to have been rapidly developed. The English writers of the Middle Ages speak of the "turkis."

The Persian name for this stone is firooz. The European name, doubtless, had its origin in the fact that the turquoise first reached Europe through Turkey. The mines which are now in operation are the same as those worked eight hundred years ago. They are found in Kerman and Khorassan. The former are now almost abandoned, the light-green color of the stones found there fading early and being little prized.

The turquoise mines of Khorassan are found near Nishapoor, famous as the birth-place of the poet Omâr Khayâm, and of the great vizier of Alp-Arslân. They are of great depth, and access to them is hazardous.

The number of small or seed turquoises of light tint found there is enormous. A pound and a half of the better grade of second-class stones was sold *in Teheran* last week for $35. But those of a dark sky-blue tint are

comparatively scarce. The Persians prize the darkest stones, while in Europe those of medium intensity are preferred. The former are more rare and retain their color a longer time. Although in general the size has much to do with the value of a turquoise, the color is the final test which fixes the price. If, in addition to possessing high quality of color, the stone is found to be free from any spot, or variation in the hue, the price ascends rapidly. There is a turquoise now in the bazaars no larger than a pea, valued at $800. This is no small sum to pay for a stone whose color does not average a duration of over fifty years.

The best turquoise mines in Persia, and indeed in the world, are at Aboûl Riâh. All the mines of Khorassan are farmed by the Mohpered Dowlet, the Nasirè Dowlet, and one or two others connected with the Government. For this privilege they pay 18,000 tomâns, equal to $30,000 annually to the Shah. The best stones are sent to Europe; and this fact, together with the recent attempt to corner the market, actually makes the price of the superior class of turquoise about as high in Persia at present as in Europe. Like other monopolies, however, this one is likely to work its own cure. I may add that there is no evidence of exhaustion in the turquoise mines of Persia.

PEARLS AND PEARL FISHERIES.

The pearl fisheries of Persia, on the contrary, appear to be in a languishing condition. Formerly a very large source of revenue, they probably are not worth to the Government at present over 50,000 tomans or $80,000 per annum. The pearl beds are farmed by the chief men of the adjacent towns, and, instead of being distributed in Persia, are sent for the most part to Europe by the steamers plying to the Persian Gulf.

The reason for the present condition of the Persian pearl beds is easily found. The pearl oysters of Ceylon are allowed a rest for intervals of two years, during which they are allowed to mature. But no such wise provision has been employed in the Persian Gulf, and the disastrous result of such improvidence is now apparent.

There is reason to believe, however, that the beds at the island of Karâk, near Bushire, which have not been worked for some time, are now in a condition to repay capital expended there, especially if diving is extended to a depth of 50 to 60 fathoms. As the ordinary depth reached by pearl divers, is rather less than this, the Mohpered Dowlet has sent to England for diving dresses of the latest invention, and a practiced diver engaged at a liberal salary. It is hoped that by these means the pearl fisheries of Persia may regain their former importance.

IMITATION ANCIENT PERSIAN ARMOR.

What has been lost by Persia in the pearl fishery she seems likely, however, to make up in part by the new industry of manufacturing imitations of ancient Persian armor and coins, to meet the extensive demand of European collectors. The ancient armor of Persia, especially of the palmy days of Shah Abbas, often displayed extraordinary beauty, costliness, and skill. But the museums of Europe long since absorbed most of the best examples of one of the most interesting of the industrial arts of the East. Specimens still exist, but are not easily obtained, and only at a high price and by those resident in the country and able to ferret out the old families who still possess fine bits of the magnificent metal work for which *Persia was once* justly famous.

But if not as inventive as formerly, the Persian craftsmen are scarcely less skillful in handiwork to-day, while labor continues cheap. If there are no armies now to be clad with carved and inlaid helmets, breast plates, and bucklers, there is an army of collectors, artists and virtuosi, studios or banqueting-halls, and the artisans of Persia have taken up the business of manufacturing old arms, which may be purchased for reasonable prices. Ispahan is the center of this industry. Nor let it be thought that these imitations are poorly made. The Persians can imitate admirably, and these modern antiques are often made in a costly manner, inlaid with silver and gold after exquisite designs of the most elaborate character. Sometimes these pseudo-antiques are sold with little attempt to conceal the fact that they are new, while in many cases much cunning has been exercised in giving them the appearance of antiquity.

Only an expert could detect the difference between some of these imitations and the genuine antique. Many of these imitations are now exported. Even the famous blades of Khorassan, whose wavy steel rivaled in temper that of Damascus, is cleverly imitated in appearance, if not in quality, by modern chemical devices.

SPURIOUS ANTIQUE COINS.

The Jews of Hamadan also carry on an extensive manufacture of spurious antique coins, against which the public should be warned. That city, the ancient Ecbatana, abounds above any other city in Persia, probably, in antiquities, and the soil seems to be full of gold and silver ornaments, coins, and the like. Although pretty well dug over of late years, the supply does not seem to be exhausted. Fine examples of the silver coins of Alexander the Great and the Sassanidæ are common. But the greed with which these have been snatched up by travelers and collectors has led the Jews of that city to consider it easier to counterfeit them than to dig for them. A steady supply of spurious coins is therefore constantly furnished the market from this source. It is customary for those who carry them around for sale to have a few genuine coins mingled in with the spurious ones. To the eye the difference is often slight, and the cheat is only detected by the ring of the genuine metal and the dull thud of the baser coins. Even gold antiques are thus imitated, having a coating of real gold, and cleverly simulating all the appearance of age.

IMITATION OF ANCIENT CERAMICS.

The manufacture of glazed tiles in imitation of the antique is also extensively carried on at Ispahan, but with less success than the imitation of old armor. Some interesting tiles are indeed turned out with rich glazes, which are very creditable. But, with the exception of blue, the colors do not approach the superb character of the former ceramic art of Persia, while the art of making *réflets* or iridescent glazes seems to be entirely forgotten.

It is safe to assume that the *réflet* tiles or dishes which occasionally reach the market are really old, dating back 600 to 1,000 years. They are generally stolen from the interior of celebrated mosques or shrines at the risk of life. Consequently they are expensive.

The blue cashee works of or before the time of Shah Abbas and the Sefanian dynasty are also difficult, if not impossible, to imitate, and

also the antique, milk-white, translucent porcelain, which is now rare and costly.

Other Persian ceramic wares assuming to be antique, should be received with caution and their antiquity proved by experts before the purchaser allows his money to pass into the hands of the dealer. One test for proving the tiles lies in the difference of texture of the wares. The old ware was baked much harder than is the present custom of the Persians, and hardly yields to the scratch of a nail, while the latter can easily be ground or punctured.

S. G. W. BENJAMIN,
Consul.

UNITED STATES CONSULATE,
Teheran, January 16, 1884.

THE WINE TRADE OF BORDEAUX FOR THE YEAR 1883.

REPORT BY CONSUL ROOSEVELT.

From the statistics of the customs department I am enabled to furnish the amount of the wine trade at Bordeaux for the year 1883.

IMPORTATIONS.

This port received in 1883, 23,462,131 gallons of ordinary wines in casks; in 1882, 23,098,614 gallons, and in 1881, 24,063,158 gallons. I give here below a detail of the importations for the past three years, mentioning separately the four principal countries from which wines are imported:

Countries.	1883.	1882.	1881.
	Gallons.	*Gallons.*	*Gallons.*
Spain	13,371,493	17,497,224	18,204,587
Portugal	6,690,732	4,846,932	4,752,729
Italy	2,147,075	463,310	607,806
Austria-Hungary	1,191,907	264,274	444,734
Other countries	60,924	26,874	53,352
Total	23,462,131	23,098,614	24,063,158

While the importations from Spain have decreased one-fourth, those from Portugal have increased about one-third, reaching, in 1883, the half of the amount received from Spain. Italy has more than quadrupled its invoices, and Austria, including Hungary and Dalmatia, more than trebled its exportations.

EXPORTATIONS.

In 1883 the exportations of wines in casks and bottles amounted to 24,226,209 gallons; in 1882, to 26,104,630 gallons, and in 1881 to 25,654,306 gallons. Although there was a decrease of 1,995,360 gallons in the exportation of casked wines in 1883, the exportation of bottled wines show an increase of 116,939 gallons.

The following are the principal countries to which the casked wines were exported:

Countries.	1883.	1882.
	Gallons.	*Gallons.*
Argentine Republic	4, 973, 996	4, 367, 092
England	3, 816, 600	3, 976, 084
Germany	3, 033, 044	4, 317, 988
Holland	1, 596, 825	2, 210, 288
Uruguay	1, 553, 510	1, 652, 049
Belgium	1, 431, 090	1, 875, 868
United States	1, 015, 541	1, 231, 525
Brazil	376, 239	334, 728
Russia	333, 165	433, 883
Other countries	3, 885, 360	3, 611, 225
Total	22, 015, 370	24, 010, 730

The following are the principal countries to which the bottled wines were exported:

Countries.	1883.	1882.
	Gallons.	*Gallons.*
England	916, 585	936, 900
United States	326, 078	192, 896
Argentine Republic	120, 461	157, 548
Brazil	61, 540	44, 284
Holland	55, 333	43, 668
Peru	45, 451	20, 755
English Indies	17, 806	11, 731
Spanish possessions in America	8, 672	10, 961
Other countries	658, 913	675, 157
Total	2, 210, 839	2, 093, 900

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Bordeaux, France, March 19, 1884.

THE INDUSTRIES OF NOVA SCOTIA.

REPORT BY CONSUL-GENERAL FRYE, OF HALIFAX.

The year 1883 was not in all respects so prosperous for Nova Scotia as the average. Merchants have complained somewhat of dull trade and of a larger proportion than usual of poor debts. Farm crops were fair, and there was a good yield of potatoes, but owing to the full supply and moderate prices in the United States, it has not been profitable to ship them there. The yield of apples—another important production of this Province—was much below the average, and I think but few were exported. In some years large quantities have been shipped to England, where they are in good demand.

MANUFACTURES.

The manufacture of many kinds of goods and articles which formerly were imported has received much attention since the adoption of the

sent Canadian tariff. We have two cotton factories in the Province, at Windsor, which has been in operation for two years or more, the er in Halifax, which was completed last summer and has since been ning out unbleached cottons. The building and machinery—the lat- of English make—are first class. Owing to the dull market, how- r, caused perhaps by overproduction, the present outlook is not ering to stockholders, and they are not looking for dividends imme- ely. It is possible the business is being overdone, for the Canadian ket is limited compared with that which the United States affords its fifty millions of consumers. But the policy of protecting home istry in this respect has been well undertaken, and is at least hav- the effect of developing some of the resources of the Provinces.

mong the industries of Nova Scotia are sugar refining, the manu- ure of boots and shoes, leather and the extract of bark, carriages, implements, rope and cordage, nails, spikes, iron ware, woolen hs, clothing, ale, beer, and tobacco. Many of these are carried on Halifax to a large extent. A factory for the manufacture of sail k, the only one I believe in the Dominion, is nearly completed at mouth, and will be ready for business the coming spring.

he Nova Scotia Sugar Refinery in Halifax has been doing a large iness for some years, and at Dartmouth, on the opposite side of ifax Harbor, another costly and extensive refinery is well-nigh com- ed. The main building is capacious, built of brick and iron, and oughly fire-proof. The machinery will be of the latest improved lish manufacture, and the proprietors, who are English capitalists, n that it shall be one of the most complete refineries on the conti- t.

SHIP-BUILDING.

hip-building is an important industry, though probably not growing roportion to some others, since iron steamers here as elsewhere are ar taking the place of sail and wooden vessels. But labor and many he materials required in the construction of vessels are compara- ly cheap, and building will continue so long as sail vessels are in and. I am informed that ships of a thousand tons or more are built his Province for $36 per register ton, fitted and ready for sea. Fishing els of 100 tons cost, for hull and spars, about $40 per register ton. ed for sea, however, with hawsers, dories, &c., the cost is $75 per

But spruce timber is used here largely, and is materially cheaper the timber used in American ship-yards.

think the business men of these seaports are appreciating more y than formerly their facilities for carrying on the Bank fisheries; , inspired it may be by the success of the enterprising men of Glou- er, are beginning to prosecute the business with more system and r than heretofore. Should the business grow there will be an in- sed demand for vessels adapted to Bank and shore fishing, which ship-yards of the Province can easily supply.

THE FISHERIES.

he Dominion "fisheries statements," or reports, for 1883 are not yet lished. The statements for 1882 did not appear till six months after close of the year. These reports are very interesting and valuable howing the extent and importance of this great industry. From the rts of 1882 it appears that the value of the productions of the fish- of the Dominion *in that year* was $16,824,090, being an increase of

more than $1,000,000 over the preceding year. The value of the Nova Scotia fisheries productions for that year was $7,131,418, or over 42 per cent. of the whole. This was an increase of $916,642 over the value of 1881. The value of the New Brunswick production was $3,192,339, being 18 per cent. of the total. That of Prince Edward Island was $1,855,687, an increase of nearly $100,000 over 1881; and that of the Gulf fisheries was $1,560,765, a falling off of $850 from the year before.

I regret that the statistics for 1883 are not yet obtainable; but I am informed that the catch of codfish was greater than in 1882, while the quantity of alewives, mackerel, and herring was probably less. It is believed the aggregate production will considerably exceed that of the preceding year.

The following table is a recapitulation taken from the official statements of 1882, showing the kinds, quantities, rates, and value of the different fishery products of Nova Scotia for that year:

Kinds of fish.	Quantities.	Rate.	Value.
Salmon, pickled ..... barrels..	700	$15 00	$10, 500 00
Salmon, fresh, on ice ..... pounds..	418, 055	15	62, 708 25
Salmon, smoked ..... do....	65, 910	15	9, 886 50
Salmon, preserved ..... cans..	1, 076	15	164 40
Mackerel ..... barrels..	73, 702	10 00	737, 020 00
Mackerel, preserved ..... cans..	42, 600	15	6, 390 00
Herring ..... barrels..	193, 361	4 00	773, 444 00
Herring, per 100, frozen ..... do....	28, 500	45	12, 825 00
Herring, smoked ..... boxes..	159, 505	25	39, 876 25
Alewives ..... barrels..	21, 056	4 00	86, 624 00
Cod ..... cwt..	611, 938	4 25	2, 600, 736 50
Cod tongues and sounds ..... barrels..	1, 263	7 00	8, 841 00
Pollock ..... cwt..	106, 248	3 50	371, 868 00
Hake ..... do....	112, 693	3 50	394, 425 50
Haddock ..... do....	162, 041	3 50	567, 143 50
Halibut ..... pounds..	752, 331	06	45, 139 86
Shad ..... barrels..	6, 456	8 00	51, 648 00
Bass, trout, and smelt ..... do	415, 435	06	24, 926 00
Eels ..... barrels..	1, 783	9 00	16, 047 00
Oysters ..... do	1, 745	3 00	5, 235 00
Lobsters, preserved ..... cans..	4, 965, 477	15	744, 821 55
Lobsters ..... tons..	840	40 00	33, 600 00
Lobsters in shell ..... per 1,000..	258, 000	25 00	6, 450 00
Fish oil ..... gallons..	475, 863	65	309, 310 95
Fish guano ..... tons..	2, 047	15 00	30, 705 00
Fish used as manure ..... barrels..	16, 192	50	8, 096 00
Fish used for bait	.....	.....	16, 220 00
Hake sounds ..... pounds..	60, 820	60	36, 492 00
Squid ..... barrels..	3, 425	4 00	13, 700 00
Halifax fish market	.....	.....	30, 000 00
Haddock, halibut, &c., in Digby County	.....	.....	22, 750 00
Home consumption	.....	.....	49, 519 00
Smoked haddies, clams, &c	.....	.....	4, 275 00
Total	.....	.....	7, 131, 418 36

It will be seen that the value of codfish exceeds that of any other kind; herring, lobsters, and mackerel are next in importance, in the order named. The lobster fisheries are of greater importance than is generally known. The value of the production of this province for the year named was about $785,000; of Prince Edward Island, $1,039,734; and of New Brunswick, $916,646. In Nova Scotia the lobsters are taken principally along shore from Yarmouth to Cape Breton and about the Straits of Canso and the Northumberland Strait. Not many, I think, are taken on the Bay of Fundy side of the Province.

There are over thirty "factories" or places on the Nova Scotia coast where lobster-packing is carried on. More than three-fourths of those are operated by companies or firms from Portland or Boston The

rhich are made on the premises, are filled, sealed up, labeled, and packed for shipment, and are sent to the United States, Great ı, the West Indies, and elsewhere.

THE MINES.

amount of coal raised in the Nova Scotia mines in 1883, accord- the returns in the inspector of mines' office, was 1,422,553 gross eing an increase of 56,000 tons over 1882, and of nearly 300,000 tons 881. The amount exported to the United States was 102,755 tons, ·ease of 3,453 tons over 1882. The largest shipments are to Que- New Brunswick is the market next in importance, while consid- quantities go to Newfoundland, Prince Edward Island, and the Indies. It is said that $1,500,000 were paid out by the several ining companies last year, and that altogether the number of s employed in and about the mines and in transporting coal by nd sea is 10,000.

production of iron last year was 52,410 tons—an increase of tons over the previous year. The Nova Scotia iron is pro- ·d very superior in quality, and iron-mining is yet to become a mportant industry in this Province.

l-mining continues steadily and surely. The annual value of the roduction has been from $200,000 to $300,000 for many years. In t was 14,107 ounces, or upwards of $250,000. Last year it was ounces, or about $280,000. Considerable expenditures are made ear to year in machinery, &c., and it is believed the production greater in the future than it has been in the past.

ypsum the production last year was 144,668 tons, being 11,000 ore than in 1882.

natural resources of Nova Scotia are abundant, and need only to y developed to greatly increase its wealth and commercial impor-

WAKEFIELD G. FRYE,
Consul-General.

ED STATES CONSULATE-GENERAL,
Halifax, N. S., February 29, 1884.

AMERICAN FLOUR AND JAPANESE RICE.

REPORT BY CONSUL-GENERAL VAN BUREN, OF KANAGAWA.

trade is, as will be seen further on, of no great value, the bulk ıt is imported being solely for the use of foreign residents and ı ships. The mass of the people of Japan are too poor to indulge

grow like other grain; and also of wheat flour, from which it will be seen that—

While a bushel of wheat yields a somewhat larger amount of nitrogenous matter, dextrine, and sugar, it contains less than 53 per cent. of the starch than a bushel of the upland rice does.

I give these references in this connection, not to comment unfavorably upon our justly celebrated and delicious American flour, but with a view of urging upon the attention of some of our cultivators a very valuable cereal, which I believe may be raised with ease and great profit in many parts of the United States, and which I feel confident would be prized as an addition to our food products.

I have just forwarded to the Department of Agriculture, at Washington, a fresh supply of rice seed, selected with great care from several varieties by the agricultural department of this empire. Specimens of these seeds can be obtained at the Department.

From the figures given below it will be seen that grain imports are scarcely worth mentioning. The imports of flour into all the open ports of Japan for the year 1880 was 10,172 barrels; for 1881 it was 16,162 barrels; for 1882 it was 8,876 barrels; for 1883 (eleven months) it was 8,845 barrels.

These figures are taken from the customs returns, which do not indicate from whence imported, but it nearly all comes from the United States. In 1882 there came from the United States 8,306 barrels, the entire import being 8,876 barrels.

During the year 1883, of the flour imports, the Pacific Mail and Occidental and Oriental Steamship Companies brought to Yokohama, from San Francisco:

	Barrels.
Flour in barrels	478
Do ..... gunnies, or half-sacks of 100 pounds (2,395 pounds) ..	1,197½
Do ..... quarter-sacks of 50 pounds (21,244 pounds) ..	5,311
Total	6,986½

Freight, per ton, by weight, $10 (10 barrels or 40 quarter-sacks per ton).

Sold here for best, at $9.50, Mexican, per barrel; in sacks, $9 (four sacks).

Sold here for second quality, at $8.50, Mexican, per barrel; in sacks, $8 (four sacks).

Sold here for common, at $6.50 to $7, Mexican, per barrel.

Most of the common flour comes from Australia; not much, however, is used.

Of grains, the importations for 1882 were as follows: Indian corn, 1,280 catties, value $118.53 (all from the United States); oats, 17,299 catties, value $490.76; oats, from United States, 16,963 catties, value $472.70; wheat and barley, 6,536 catties, value $261.80; wheat and barley, from United States, 6,453 catties, value $259.34. A catty contains 1¼ pounds.

THOS. B. VAN BUREN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Kanagawa, Japan, February 1, 1884.

CENSUS OF BAVARIA FOR THE YEAR 1882.

REPORT BY CONSUL HARPER, OF MUNICH.

m the last publication of the Royal Statistical Bureau, the follow-ems are gathered:

Provinces.	Births.	Deaths.	Marriages.	Illegitimate births.	Surplus of births over deaths.
Bavaria	40,177	30,691	7,009	7,629	9,486
Bavaria	27,848	20,671	4,271	4,593	7,177
ate	26,397	15,581	4,819	1,461	10,816
Palatinate	22,316	16,921	3,667	2,641	5,395
Franconia	19,817	14,129	4,175	2,970	5,688
Franconia	25,497	18,916	5,700	4,445	6,581
Franconia	20,737	15,231	3,897	1,863	5,506
	26,438	21,012	4,263	2,918	5,426
Whole kingdom	209,227	153,152	37,801	28,520	56,075

e majority of the births were in January and March, the smallest er in June and November. The most deaths occurred in April Iay, the least in September and October. The most marriages place in February, the least in December; 2,446 twins were born 9 triplets.

ring the first year of life there died 75,940, or nearly half of all s, and of this number 57,966 died in the first month of life.

25,939 Catholic husbands 24,488 have Catholic wives, 1,445 have stant wives, 3 Israelites, and 3 wives of other confessions.

11,468 Protestant husbands 9,965 have Protestant wives, 1,490 Catholic wives, 3 Israelites, and 10 wives of other confessions.

359 Israelite husbands 352 have Israelitic wives, 5 have Catholic s, and 2 have Protestant wives.

35 husbands of other confessions 2 have Catholic wives, 13 Pro-nt wives, 19 wives of various confessions, and 1 a wife without on.

100 Catholic husbands nearly 6 per cent. made mixed marriages, of stant, 16 per cent.; of bachelors, 30,028, or 93 per cent., married s; 2,042, or 6 per cent., widows; and 52, divorced wives.

widowers, 4,537, or 81 per cent., married maids; 1,005, or 18 per , widows; and 24, divorced wives. Of 113 divorced husbands 86 ied maids, 17 widows, and 10 divorced wives.

5,238 marriages, or 14 per cent., 7,073 illegitimate children be-legal.

ree hundred and eleven marriages took place between blood rela-, viz, 271 between cousins, 25 between uncles and nieces, and 15 een nephews and aunts.

e illegal births increased in 1881 and 1882 in absolute numbers, as in per cent. of births. Marriages also increased in 1881 and 1882. leaths remained the same.

ere immigrated into Bavaria 17,470 persons, and emigrated from ria 23,721—making a difference against Bavaria of about 6,000. cting this number from the surplus of births over deaths, there n increase in the Kingdom of about 50,000 persons in the year 1882.

The emigration increased from 18,127, in the year 1880, to 22,049 in the year 1881, and to 23,721 in the year 1882; showing an increase in 1882 over 1880 of 5,594, or nearly 32 per cent. Against this are the immigrations into Bavaria, which increased from 15,031 in 1880 to 15,322 in 1881, and to 17,470 in 1882; making, from 1880 to 1882, 2,439, or 16 per cent.

JOSEPH W. HARPER,
Consul.

UNITED STATES CONSULATE,
Munich, February 14, 1884.

LABOR, WAGES, AND LIVING IN GERMANY.

REPORT BY CONSUL-GENERAL BREWER, OF BERLIN.

In my recent annual report touching the trade and industry of Germany for the year ending September 30, 1883, I presented an official statement showing the rates of wages in the city of Berlin during the year 1882, that being the latest official report upon the subject that I was able to procure. At that time I took occasion to briefly state my views touching wages as well as the cost of living in Germany, as compared with the same in the United States. I then stated:

I think there has been an average slight increase in the rates of wages in Germany during the last year.

Labor has found employment more generally than it did a few years ago, and seemingly less discontentment has existed among the laboring classes. The average rate of wages paid in Germany is probably from 50 to 60 per cent. of what is paid in the United States, and it is only by exercising the greatest economy that the laborer is able to subsist upon his small earnings.

It is generally supposed that the cost of living in Germany is much less than in the United States, and that the laborer can purchase as many of the necessaries of life from his income as he can in America, but a few years' residence here will convince any person that such is not the case. Nearly all the necessaries of life cost as much in the city of Berlin as in the city of New York, and often more.

Meats of all kinds, flour, bread, butter, fish, fruits, tea, and coffee and cotton goods are more expensive than in New York, while woolen goods and table linen are much cheaper here.

Such was the conclusion arrived at by myself after two years' residence here; and knowing that much attention is being given in Congress as well as among the people of our own country to the question of labor and the cost of living, it has led me to repeat such statement upon this occasion and to present further proof in confirmation thereof; and first I here present a table showing the average amount earned weekly in Berlin by those employed at manual labor, whether working by the day or doing piece or job work.

ng the amount of wages paid at Berlin (ascertained in the month of July, 1883).

[Published by the Statistical Bureau of the city of Berlin.]

Occupations.	Weekly average.		Daily work-time, including pause.
	Wages for day work.	Wages for piece work.	
s:			
men	$4 28	$4 28	12
ices	1 90		8–10
granite industry:			
man stone-cutter	5 71		12; at machines, 13.
ice	1 78		
grinder	4 28		
g man	4 28		
ufacturing:			
		5 23	12½
		4 28	12½
man	3 57		12½
anufacturing:			
g man		6 42	12
g:			
g man	4 14		13
d stone goods manufacturing:			
		4 76	13
g man	3 26		13
ne casting:			
	4 28		12½
	4 28		12½
g man	3 26		12½
man	4 28		12
:			
man	4 99		11–12
ice	3 21		11–12
g man	3 80		11–12
man	4 28	4 28	11½–12
manufacturers:			
man	5 71		12
ice	1 07		12
	2 14		12
g man	4 28		12
er-goods makers:			
man	4 28		11
ice			
	2 38		11
g man			
man	4 28		12
ice	1 19		12
	2 14		12
g boy	2 14		12
arts for sewing-machines:			
g man	4 28		12½
ice	3 57		12½
g boy	1 66		12½
	2 14		12½
, tin-potter:	2 38		12½
man	7 14		12
er:	4 76		12
man	3 75–4 76		13
ice	71–95 1 19–1 42		13
:			
man	5 71		13
ice	4 76		13
(journeyman)	4 28–4 99		
workers:			
mith assistant	4 99		11½
rner	5 71		11½
urneyman)	4 28		11½
th (journeyman)	4 90		11½
g man	3 09		11½
urneyman)	3 92		12
(journeyman)	4 28		12
(journeyman)	4 28		12
rneyman)	3 57		13
journeyman)	3 57		13

Table showing the amount of wages paid at Berlin, &c.—Continued.

Occupations.	Weekly average.		Daily work time, including pause.
	Wages for day work.	Wages for piece work.	
Braziers:			
Journeyman	$4 28		12
Apprentice	1 00		12
Molders:			
Journeyman	4 99		12
Apprentice	1 42		12
Cast iron and engine workers:			
Machine-makers	4 45		
Smiths	3 87		
Joiners	4 64		
Molders			
Laboring men	3 37		
Joiners and copppersmiths	6 90	$7 14	12
Turners, cutters, smiths, founders, lockamiths, and file-cutters	5 71	6 42	
Varnishers	5 71	5 95	
Polishers, assistants, and laborers in workshops	3 57	4 76	
Yard laborers	3 09	3 80	
Apprentices	1 90	1 90	
Sewing-machine makers:			
Locksmiths	5 71	5 71	11½
Joiners	4 19	5 47	11½
Laboring men	3 92	4 52	11½
Girls	2 49	3 09	11½
Cartwrights:			
Journeyman	3 57	4 28	12
Telegraph-builders:			
Journeyman	4 61	6 90	11½
Apprentice			11½
Laboring man	3 85		11½
Girls	2 18	2 85	11½
Mechanicians:			
Journeyman	4 28	4 76	12
Watchmakers:			
Journeyman	4 28	5 95	12
Chemical workers:			
Foreman, masters	5 95		
Laborer	3 57		12
Boys	1 90		
Females	1 99		
Operatives in mills for dye-woods, &c.:			
Laborers	3 92		12½
Machinists	4 64		
Workers in aniline factories:			
Foreman	10.7 cents per hour.		
Journeyman	7.1 cents per hour.		12
Laborers	5.2 cents per hour.		
Stearine-candle workers:			
Foreman	7 14		
Laboring man		2 66	
Laboring girls		3 33	
Handicrafts	1 19 per day.		13
Girls	33 cents per day.		
Soap-makers:			
Journeyman	3 92		12
Laboring man	3 92		13
Laboring man	4 40		13
Perfumery workers (laboring man)	4 28		11
Palm-oil makers:			
Laboring man	3 57		11
Journeyman	4 76		11
Oil refiners:			
Foreman	5 71		
Laboring men	4 52		13
Cooper	4 52		
Lubricating oil works (laboring man)	4 52		12½
Ethereal oils, workers (laboring man)	4 52		12
Gravel-roofing workers:			
Laborers, males	4 16		
Laborers, females	1 42		13
Machenist	5 35		
Fireman	5 35		

Table showing the amount of wages paid in Berlin, &c.—Continued.

Occupations.	Weekly average wages.		Daily work time, including pause.
	For day work.	For piece work.	
Gravel-roofing workers—Continued.			
Sorters	$4 28		
Roller	3 57		
Assistant	2 85		
Coachman	3 92		
Workingmen	3 57		12
Rag-cutters	1 90		
Rag-sorters	1 60		
Paper-sorters	1 21		
Artificial-wool mills (laboring man)	4 99		13
Woolen-yarn mill:			
Hand-worker	2 14		
Machine-worker	1 90		11½
Apprentice	1 42		
Silk woolen-yarn mill:			
Journeyman	5 71		12
Laboring woman	2 14	$3 21	
Silk-thread manufacturing (laboring women)	2 00		12
Long-wool spinning:			
Spinners	6 42		13
Locksmiths	4 76		13
Workmen	3 57		13
Girls	2 08		13
Ribbon-makers (journeyman)	3 57		12
Weavers:			
Journeyman		3 21	
Apprentice			14
Reelers	1 78		
Journeyman	3 04		
Hosiery-makers:			
Shearers	1 66		12
Reelers	1 66		12
Woolen mills:			
Weavers, females		2 14	12
Reelers		2 14	12
Shearers		3 57	12
Carpet-weavers:			
Weavers		7 14	12
Workingman	4 28		12
Locksmiths	4 99		12
Joiners	4 99		12
Girls	1 90		12
Boys	2 14		12
Cloth-makers (journeymen)		2 38–3 09	14
Woolen-yarn dyeing (laboring man)	3 09		12
Wool dyeing:			
Laboring woman	2 14		13
Journeyman	3 80		13
Girls	1 90–2 85		13
Silk-dyeing:			
Journeyman	5 71		11
Laborer, male	4 04		11
Laborer, female	2 85		11
Calico-dyeing, bleaching, &c.:			
Laborer, male	3 57	5 95	13
Laborer, female	2 14	3 09	13
Finishing and dyeing:			
Masters and journeyman	7 14		13
Laborers, male	3 57		13
Laborers, female	2 97		13
Finishing of cloths, shawls:			
Laborers, male	3 58		12
Laborers, females	1 96		12
Trimming-makers:			
Journeyman	3 80	4 99	13
Girls	1 90	3 33	13
Apprentice	1 19		13
Rope-makers (journeyman)	4 28		(*)
Fancy-paper workers:			
Journeyman	4 99		10
Boy	1 78		10
Girl	1 78		11
Binder	4 16		10½
Presser	2 97		10
Lithographer	7 85		10

*Summer, 12; winter 7.

Table showing the amount of wages paid in Berlin, &c.—Continued.

Occupations.	Weekly average wages.		Daily work time, including pause.
	For day work.	For piece work.	
Fancy-paper workers—conlinued.			
Engraver		$4 99	11
Stone-grinder		8 56	11
Pasteboard making:			
Laborers, male	$4 52		12
Laborers, female	1 90		12
Tanning and finishing leather:			
Journeyman	4 99		13
Laborers	4 99		13
Manufacturers of leather goods:			
Journeyman	4 99		13
Workingman	4 16		13
Album manufacturing:			
Journeyman	5 71		12
Laborers	4 99		12
Girls	2 85		12
India-rubber goods making:			
Journeyman	4 28		12
Boys	2 14		12
Girls	1 90		12
Laborers	3 92		12
Hard-rubber and celluloid factories (laborers)	4 85		12
Saddlers and similar occupations:			
Wagoners	4 06	4 52	12
Purse-makers	3 57	4 04	12
Harness-makers	3 09	3 80	12
Soldier's effects	3 57	4 04	12
Upholsterers:			
Journeyman	4 99		12
Seamstress	2 49		12
Apprentice	1 24		12
Steam sawing mills:			
Laborers	3 57		12½
Coachman	4 28		
Cutters	6 18		
Sawers		5 95	
Wood-molding makers:			
Molders	4 76		13
Circular-saw cutters	3 80		
Joiners	4 28		
Turners	4 28		
Laborers	3 92		
Joiners (journeyman)	4 28		12
Coopers (journeyman)	4 28		12
Straw and felt hat makers (journeyman)		4 28	11
Basket-makers (journeyman)		4 28	13
Horn-button makers (journeyman)		4 28	10
Vegetable ivory-button makers:			
Laborers, males	3 57		13
Laborers, female	2 14		12
Ivory saw-mills (journeyman)	4 28		11½
Comb-makers (journeyman)	3 57–4 28		10½
Brush-makers (journeyman)	4 11		13
Cane and whip factories:			
Laborers, male	3 33	4 76	13
Boys	1 90		
Laborers, female	2 02	3 33	
Girls	1 54		
Gilders:			
Journeyman	3 57		12-13
Apprentice	1 00		
Laborer, male	3 57		
Photographic-frame makers:			
Laborer	3 57		12
Laborer, female	1 42		12
Steam mills (flour):			
Journeyman, per day	89		12
Saddler, do	77		
Millwright, do	95		
Joiner, do	83		
Laborer, do	59		
Locksmith, do	71		
Machinist, do	83		
Fireman, do	89		
Bakers (journeyman)—and board	2 85		.....
Confectioners (journeyman)	7 14–14 00		.....

Table showing the amount of wages paid in Berlin, &c.—Continued.

Occupations.	Weekly average wages.		Daily work time, including pause.
	For day work.	For piece work.	
ories of malt extract and chocolate:			
er, male	$2 63		11
er, female	2 02		11
ories of chicory:			
ers	3 92		12
ers		$4 04	13
ers		5 71	13
r		7 14	12
ers		5 71	12
(journeyman)—and free lodging and board	2 14		
ories of mineral waters (laborers)	3 57		13
ories of tobacco:			
ers, male	3 57		13
ers, female	1 78		13
	1 60		13
ters (journeyman)	4 28		11
ourneyman)	4 28		13
oak makers:			
eyman	4 28		12
er, female		2 14	12
ories of artificial flowers (women)	3 33		9½
ories of hats:			
rer, male		5 71	10
rer, female, young	2 14		10
tories of felt shoes:			
rer, male	4 52		12
rer, female	2 85		12
	2 08		12
eyman	3 57		13
en	2 14		13
kers (journeyman)	3 57		12
ers:			
eymen	2 85		11–14
iers	3 92		10–12
journeymen)—and free board and lodging	1 78		16
sers (journeymen)	4 99		12
nan	7 14		12
eymen	5 35		12
ntice	2 14		12
ers (journeymen)	3 57	4 28	12
rs (journeymen)	4 99		10–12
ers (journeymen)	6 18		10
	4 28		12
lass makers:			
r	6 66		12
ers	4 28		12
eyman	4 99		11
-painter	3 57		11
ntice	1 42		12
streets:			
nen	7 37		12
eymen	6 00		12
iers	4 00–4 28		12
ingmen	3 21		12
ntices	2 85		12
sweepers (journeymen)	4 99		8–10
iders (journeymen)	4 28		10
n the Imperial Printing Office:			
tives	7 42		10
ingmen	3 71		10
eymen	6 06		10
ntices	1 78		10
en	2 78		10
hy:			
eymen	6 42		10
ntices	1 78		10
	2 38		10
graphers	5 23		10
printer boys	1 19		10
	1 78		10
:			
tors	5 71		12
rers	5 71		12
eymen	4 28		12
ntices	1 19		12

As will be seen, the average number of hours per day is from ten to thirteen, varying somewhat in the different trades. Laborers are allowed each day from one to two hours during such time for eating and rest.

They all, except bakers, butchers, and barbers, board and lodge themselves. Of course some of them earn more and some less than the amounts given, the amounts given being the actual average. It will be seen that the figures given in the above table are official, and their correctness is undoubtedly beyond serious question.

I am not at present able to give any official figures showing the general rate of wages upon farms in Germany, but I herewith present a statement which I find in a work entitled "Germany, present and past," written in 1881, by S. Baring Gould, M. A., an Englishman, who has spent much time in Germany. He says, on page 329:

The average price of labor in Germany on the land is now, in marks:

Country.	Yearly average per day.	Reduced to—
	Marks.	*Cents.*
Prussia	1.07	25
Pomerania	1.46	34
Posen	1.10	26
Brandenburg	1.31	31
Silesia	.82	09
Saxony	1.29	30
Hanover	1.53	36
Schleswig Holstein	1.66	39
Westphalia	1.55	37
Rheinland	1.58	37.6
Kingdom of Saxony	1.41	33.5
Bavaria	1.35	32
Würtemberg	1.62	38.5
Baden	1.65	39
Hesse-Darmstadt	1.35	32
Alsace-Lorraine	1.85	44

PRICES OF THE NECESSARIES OF LIFE.

I have taken much trouble to gather correct figures as to the retail cost price of some of the most necessary articles for family consumption, which I now here present:

Food prices.—Wheat flour, $5 to $6 per hundred; corn meal, 5½ to 6 cents per pound; oatmeal, the same; Carolina rice, 8 to 10 cents per pound; Japan rice, 6 cents; eggs, 25 to 28 cents per dozen; table butter, 30 to 38 cents per pound; beef and mutton for roasts, 17 to 20 cents per pound; beef filet, 30 to 40 cents per pound; pork, 16 to 20 cents per pound; ham, 25 to 30 cents per pound; lard, 18 cents; veal, 22 to 25; fresh fish, 20 to 30 cents; turkey, 22 to 25; chicken, 18 to 20 per pound; English biscuits (crackers), made here, 22 cents per pound; wheat bread, pound loaf, 10 to 12 cents; black bread (rye), at least one-half less. This kind of bread is preferred by very many of the more wealthy people, while really no other is used among the laboring classes. Sugar, white, pulverized or granulated, 12 cents per pound; bricked or loaf sugar, 12 to 15 cents per pound; oysters in shells, English, 95 cents per dozen; Holland, 59 cents; American, not used.

The kinds and grades of tea and coffee vary so much that I am unable to give any figures that would be of use to those who are unable to examine the quality for themselves, and I deem it sufficient for me to state that every pound of tea, without regard to quality, which comes

into Germany, must pay a duty of 11 cents, while every pound of raw coffee pays 4½ cents, and of roasted coffee 5½ cents.

I have no doubt whatever but that tea and coffee cost more here than in New York to the amount of the duty so levied on each. There is a duty of about 3½ cents per pound levied on sugar, but only a comparatively small amount of sugar is imported, as Germany produces more than she consumes.

The duty on rice is about 1 cent per pound.

Cottons.—Calico, 8 to 12 cents per meter (one meter being equal to 1.0936 yard); cotton sheetings, bleached, 1.60 meter wide, 36 to 40 cents per meter; linen sheetings, bleached, 2 meters wide, 48 to 68 cents per meter.

Firewood is very scarce, while stone coal (hard) is to-day worth $4.50 to $5 per ton, and brown coal (soft) $3.50 to $4.

LABOR IN GERMANY AND IN THE UNITED STATES.

As I have already stated, boots, shoes, and clothing generally is cheaper than in America, and undoubtedly there are many other articles cheaper here than with us; but it will be found, upon investigation, that they are far less essential than articles of food. I have no doubt that more than one-half of the expenses of a laboring man, on the average, is expended for the food consumed by himself and his family. The following table, showing the actual cost of living of a joiner and a locksmith for one year in Berlin, illustrates this point as well as presents other suggestions of interest:

Statement of laborer's yearly expenses, as per accounts kept by a joiner and a blacksmith at Berlin.

Expenses for—	Joiner, single.	Locksmith, single.
Rent	$25 70	$30 00
Light	.....	2 61
Food	94 69	125 38
Beverages	27 23	28 72
Clothing and linen	19 65	46 41
Taxes	2 85	2 10
Hygiene	2 42	7 84
Clubs, newspapers, &c	2 83	4 12
Tobacco	4 42	3 76
Amusements	3 18	18 80
Total	182 97	269 74

I know it will be said in the United States, if wages are so small and food so expensive in Germany, how can the laboring people subsist and care for their families? I answer: Because the laboring people of Germany do not live as well as they do in the United States, and they are much more economical in ther manner of living and in their expenditures; and then, again, nearly all the members of a family are wage-earners, and assist in caring for themselves and the general household.

The laboring women here are accustomed to perform the most menial, as well as the hardest kind of labor, such as would be performed in the United States only by the strongest men

Of the 200,000 Germans who annually leave their native land and find a home in the United States, a very large proportion are from the peasant or laboring class, and the most of them, at least of those who set-

tle in the rural districts, retain these habits of industry and economy. and soon provide themselves with a piece of land and a home, such as they would be unable to acquire here.

M. S. BREWER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, February 16, 1884.

NEWSPAPERS IN RUSSIA.

REPORT BY CONSUL-GENERAL STANTON, OF ST. PETERSBURG.

I transmit herewith a report on the periodicals of Russia, the particulars of which have been gleaned from the Russian Review.

It would appear from the figures given that the entire circulation of Russian periodicals hardly exceeds 2,500,000 copies.

The population of Russia is estimated at 100,000,000, which gives one copy for every 40 inhabitants.

According to official returns, there are 776 periodicals published in Russia, an exceedingly modest number when compared with the 11,196 published in the United States, the 2,520 French, and the 2,076 British periodicals.

Periodicals are published in 126 towns in Russia, 55 per cent. being printed in government cities, 10 per cent. in small provincial places, and 35 per cent. in the two capitals, St. Petersburg and Moscow.

The greatest number, 25.4 per cent., or 197, is published in St. Petersburg. In Paris 1,291 journals, or 51 per cent.—double St. Petersburg's percentage—are published, whilst London, with 549—26 per cent. of the English periodicals—more nearly approaches the Russian capital.

After St. Petersburg come Warsaw with 79; Moscow with 75; Helsingfors with 36; Riga with 23; Tiflis with 21; Kief with 20; Odessa with 19; Kazan and Karkoff with 11 each; Reval with 9; Dorpah and Mitau with 8 each; Meaborg with 7; four towns with 6; four with 5; twenty-one with 3; thirty-eight with 2, and thirty-seven with each 1 periodical.

Of these publications two-thirds are issued in Russian and one-third in foreign languages, the chief of which are Polish, German, Finnish, and Swedish.

In the two residences 249 are published in the Russian language, one of which is issued in three—Russian, French, and German—and one in Russian and German.

Besides these, 9 are issued in German; 4 in French; 2 in Latin; 2 in Hebrew, and one each in English, Polish, Finnish, and Armenian. Of the whole 92 per cent. are Russian and 3 per cent. German.

The provincial press has, however, a wholly different character; 265, or 52 per cent., are published in Russian; 100 of these are official organs, edited by Government, district, or church authorities. Of the remainder 80 are issued in Polish; 43 in Finnish; 39 in Swedish; 36 in German; 13 in Lithuanian; 9 in Armenian; 4 in Grusinian; 2 in French; 2 in Tartar, and 1 in dialect.

Periodicals are accordingly published in fifteen languages in Russia. In those languages predominating in Western Russia—such as Polish, Swedish, Finnish, German, Lithuanian, and Esthonian—44 per cent. of the whole provincial press is published.

Considering that these journals appear chiefly in Finland, the Baltic provinces, and Poland, and that, besides those, other newspapers are published in the Russian language, it may safely be assumed that at

least half of the provincial journals of Russia are published in these provinces.

In the two capitals the German language ranks first, but in the provinces, contrary to the general assumption, Polish, Swedish, and Finnish come to the front, German ranking fifth, and French tenth.

More than one-third of the periodicals of Russia, as well in the provinces as in the capitals, are published by various Government, municipal, learned, and other institutions, and, as a matter of course, principally in the Russian language. Deducting these periodicals, almost half of all the journals published by private enterprise in Russia are edited in other than the Russian language.

The responsible editors of the press of the capital, some 272, belong in the main to the bureaucracy. Government institutions edit 16½ per cent., private, learned, and municipal institutions 12 per cent. The clergy are represented by 6 persons, 2 of whom are Lutherans; and military and civil officials, their wives, widows, and daughters edit 51 per cent. of the periodicals of the capital.

Of these persons 36 belong to the upper classes (generals, actual councilors of state, and privy councilors), whilst 65 editors belong to the ordnance department, and the corresponding marine and civil departments, and 37 to the higher officials, both military and civil. Professors and artists are estimated at 15 per cent., but their number is far greater, since many have been included in the bureaucracy. In addition to these, the two capitals include among their editors 23 noblemen, 3 book-dealers, 5 printers, 2 honorary citizens, 6 merchants, 9 citizens, and 10 foreigners.

Of the editors not in the service of the state, 31 or 29 per cent. possess a university degree.

Of the 504 provincial editors, 180 belong to Government, municipal, learned, or other associations, 47 to the clergy, 70 to the military and civil services. Of the remaining 207 editors, 42 per cent. have had a university education. The bureaucracy is not so strongly represented as in the residences, but 1 per cent. belonging to the four upper classes of officials. Among the provincial editors are 10 book-dealers, 19 printers, 1 artist, 19 noblemen, 14 honorary citizens, and 3 women.

Seventy-one per cent. of the periodicals of the capital are published by private enterprise, 11 per cent. at the cost of the Government, and 18 per cent. at the cost of various associations. Details are lacking for the provincial press.

Two hundred and thirty-six periodicals, or 30 per cent. of the whole press, are published without censorship, viz, in St. Petersburg, 101 out of 197; Moscow, 30 out of 75; and in the provinces, 105 out of 504.

There are printed 1 periodical in an edition of 71,000 copies; 3, of 25,000 copies; 5, of 20,000 copies; 7, of 10,000 to 20,000 copies; 25, of 5,000 to 10,000 copies; 87, of 1,000 to 5,000 copies; 94, of 500 to 1,000 copies; 39, of 100 to 500 copies.

As regards the age of the Russian periodical press, the following particulars may be mentioned: In the two capitals there are three periodicals which have been published more than a century, and as many in the provinces, viz: In the capitals, 156, 155, 127; in the provinces, 123, 109, and 108 years; 15 residence periodicals and 12 provincial have an age of more than 50 years; and 36 residence and 75 provincial periodicals an age of more than 25 years; 335 periodicals are younger than 10 years, viz, 37 per cent. in the capitals and 46 in the provinces. One-fifth of the entire provincial press has been published since 1881, in

which year 67 periodicals began. The greater part of the Government periodicals have been published since 1838.

Of periodicals with illustrations, plans, maps, &c., there are 70, 47 of which are published in St. Petersburg and 23 in Moscow. The press of the capitals is divided into 192 periodicals—St. Petersburg 142, Moscow 50—and 80 newspapers—St. Petersburg 55, Moscow 25. The periodicals are generally published once a month (85), or once a week (44); the newspapers being 31 dailies, 21 weeklies, and 9 semi-weeklies. One-fourth of the newspapers are subject to censorship.

In the provinces there are 346 newspapers and 158 periodicals. To the former belong 80 governmental and 44 religious newspapers. The majority of the provincial newspapers appear once a week, 83; daily, 65; twice a month, 43; and twice a week, 34; whilst the periodicals are generally published once a month, 48, or once a week, 45.

The annual subscription price varies from 20 copecks (10 cents) to 22 roubles ($11), and in Finland from 80 pf. (40 cents) to 22 mks. ($11). Fourteen papers are distributed gratuitously. The greatest number of the journals of the capitals have fixed their subscription at from 3 to 8 roubles ($1.50 to $4), and in the provinces from 5 to 6 roubles ($2.50 to $3). The dearest paper is one in Warsaw, costing $11, and then the Journal de St. Petersburg, $9.

Divided according to their contents, there are published in Russia the following periodicals:

Devoted to—	St. Petersburg.		Moscow.		Provinces.		Total.
	Newspapers.	Periodicals.	Newspapers.	Periodicals.	Newspapers.	Periodicals.	
Church and religion	1	4	.....	6	67	14	92
Jurisprudence	3	7	1	2	2	6	21
Town and country administration	1	1	2	1	5	8	18
Trade and commerce	1	2	.....	3	9	7	22
Army and navy	.....	7	.....	.....	.....	5	12
Medicine and pharmacy	4	11	.....	3	4	12	34
Education and pedagogics	.....	8	.....	3	1	19	31
Reading matter for children	.....	4	.....	5	1	3	13
Reading matter for soldiers	.....	2	.....	.....	.....	.....	2
Reading matter for the people	.....	2	.....	.....	9	.....	11
Agriculture	1	9	3	2	8	13	36
Forestry	.....	3	1	.....	.....	.....	4
Metallurgy	.....	1	.....	.....	1	.....	2
History and archæology	.....	6	.....	2	.....	2	10
Geography and ethnography	.....	3	.....	.....	.....	3	6
Mathematics and natural sciences	.....	5	.....	3	.....	5	13
Philology	.....	.....	.....	.....	.....	3	3
Statistics	.....	.....	.....	.....	1	.....	1
Arts	8	11	1	2	3	1	26
Fashion and needlework	.....	6	.....	.....	.....	3	9
Charity, protection of animals, &c	.....	1	.....	.....	1	3	5
Hunting	.....	.....	.....	1	.....	.....	1
Railways	.....	2	.....	2	.....	.....	4
Insurance	.....	1	.....	.....	.....	.....	1
Literature, belles-lettres	.....	6	.....	3	.....	10	19
Bibliography	.....	2	.....	.....	.....	2	4
Periodicals for reference, &c	4	4	1	3	24	.....	36
Politics and miscellaneous	31	32	15	9	210	32	329
Technical sciences	.....	3	.....	1	.....	7	11

EDGAR STANTON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
St. Petersburg, February 22, 1884.

NEW WIRE-GAUGE IN ENGLAND.

ES REPORTS, BY CONSUL KING, OF BIRMINGHAM, CONCERNING THE NEW WIRE-GAUGE STANDARD ADOPTED IN ENGLAND.

FIRST REPORT.

NEW WIRE-GAUGE STANDARD ADOPTED BY THE BOARD OF TRADE.

n important change is about to take place in the measurement or ge by which metals are sold in this country. The so-called wire-ge is the standard of measurement by which sheet-metals as well as ıd metals have been sold.

itherto, to speak more correctly, there has been no standard, be-ıe there have been several wire-gauges in use, and in cases where ɔt measurements have been required, frequent misunderstandings e arisen where the manufacturer has understood one wire-gauge the purchaser supposed another to have been meant.

he new imperial wire-gauge which is to go into use the 1st of March, ł, differs in many details from the former wire-gauges, but it estab-es a standard and will be the only legal gauge in England by which lisputes must be settled, unless some other wire-gauge shall have ı specially mentioned in the contracts. This new gauge seems to atisfactory to the wire-makers, but quite the contrary to the sheet-al makers, who have strongly condemned it.

ı October last, the Iron Masters' Association of South Staffordshire nimously resolved to reject the new wire-gauge.

ı November a deputation of the Iron Masters' Association of Staf-shire, Lancashire, Bristol, South Wales, and Scotland waited upon president of the Board of Trade and protested against the new wire-ge. Their objection was that the new gauge, though suitable for ɔ-makers, did not at all suit the iron trade in general, which is much e important than the wire trade.

he president of the Board of Trade said that at first it did not nat-ly suggest itself that a gauge called a wire-gauge was also used by ɔt-metal makers, but before the final result was attained the sheet-al makers had been consulted. However, as what would satisfy n would not satisfy the wire-makers and round-metal manufacturers, ıad determined to establish a wire-gauge suitable for the wire trade. would give careful attention to any proposal of an imperial stand-for the flat-metal trade, and in the mean time they were not obliged se the imperial gauge now under consideration, if the contrary is ed in contracts.

ı December a meeting of sheet-iron makers, brass, copper, and zinc-al workers, and galvanized-iron workers was called in this town by Iron Masters' Association, at which it was resolved that they would pt the gauge known as the Birmingham wire-gauge as a standard ge for flat metals.

y attention has been especially called to a few of the differences be-ən the Birmingham and imperial standard wire-gauges, which, ıgh slight perhaps in themselves, are of vital importance in matters ıiring exact measurement.

ı the imperial standard 20 gauge is nearly equal to 21 Birmingham;

24 is thinner than the old 25; 27 is equal to the old 28, and 28 is almost equal to the old 29.

I only mention these as illustrations, but I inclose a copy of the new wire-gauge, with tables, which have been issued by the Iron and Steel Wire Manufacturers' Association.

WILSON KING,
Consul.

UNITED STATES CONSULATE,
Birmingham, February 12, 1884.

The imperial standard wire-gauge.

[To go into operation March 1, 1884.]

Size on wire gauge.	Diameter.		Weight of		Length of cwt.	Breaking strains.	
	Inch.	Millimetres.	100 yards.	Mile.		Annealed.	Bright.
			Pounds.	*Pounds.*	*Yards.*	*Pounds.*	*Pounds.*
				1,494	58	10,470	15,700
				1,260	67	9,017	13,525
				1,141	78	7,814	11,725
				1,179	91	6,702	10,052
				1,365	105	5,796	8,694
				1,089	120	5,072	7,608
				1,439	138	4,397	6,595
				1,235	161	3,770	5,655
				1,057	190	3,190	4,785
				784	228	2,660	3,990
				712	269	2,254	3,381
				612	322	1,883	2,824
				562	393	1,544	2,316
				453	467	1,298	1,946
				348	566	1,072	1,608
				252	700	869	1,303
				203	882	687	1,030
				153	1,077	564	845
				145	1,333	454	680
				114	1,723	355	532
				88	2,240	268	402
				70	2,800	218	326
				55	3,500	172	257
				43	4,667	131	196
				31	6,222	97	145
				21	9,333	67	100
				18	11,200	55	82

[illegible] REPORT.

[illegible] THE SHEET-METAL TRADE.

[illegible] informed you of the dissatisfaction [illegible] concerning the new imperial [illegible]. I also reported that at a meeting [illegible] December last, it had been resolved [illegible] wire-gauge should be adopted as standard [illegible] buyers in all parts of the world [illegible] and if the particular standard [illegible] disputes and lawsuits are apt to result. [illegible] discussion among the iron men, and [illegible] was held at the Birmingham [illegible] sheet-metal works in the district [illegible]

[illegible] arrived at at the meeting in [illegible] because manufacturers had not

been able to agree since then as to what the Birmingham wire-gauge really has been and is.

The result is a serious dilemma. The new imperial wire-gauge is only adapted for the use of wire-makers, and the old Birmingham gauge is a doubtful, some even said mythical, standard. One party declared it was really Partridge's gauge and another that it was Stubbs's gauge, and the result has been confusion. After long and serious discussion the meeting unanimously resolved:

That this meeting adopts the gauge known as the Birmingham gauge, and further resolves that such Birmingham gauge shall be the proposed standard gauge for sheet-iron and hoop-iron already printed and issued by the South Staffordshire Ironmasters' Association to the manufactured-iron trade, and by them approved, and also deposited with the Board of Trade, and that such gauge shall in future be used under the initial letters "B. G."

This new gauge, to be known hereafter as "B. G.," is described as being a symmetrical adjustment of the Birmingham wire-gauge known as "B. w. g.," formulated by Mr. Hatton at the request of the Ironmasters' Association.

A comment made upon the action of this meeting is that perhaps, under the circumstances, the compromise is a good one; but, as it is neither scientific nor universally accepted, it cannot be looked upon as final.

On the other hand, those iron manufacturers to whom I have spoken on the subject seem to think that the new gauge will be a good working one, and that the makers of hoop and sheet iron in Lancashire and other parts of England will probably adopt it.

I inclose herewith duplicate copies of the new gauge.

WILSON KING,
Consul.

UNITED STATES CONSULATE,
Birmingham, March 1, 1884.

B. G.

Parts of inch.	No. on gauge.	Proposed thickness.	Parts of inch.	No. on gauge.	Proposed thickness.
One	15°	1.000		20	.0392
	14°	0.9583		21	.0349
	13°	.9167	One thirty-second	22	.0312
Seven-eighths	12°	.8750		23	.0278
	11°	.8333		24	.0247
	10°	.7917		25	.0220
Three-fourths	9°	.750		26	.0196
	8°	.7083		27	.0174
	7°	.6666	One sixty-fourth	28	.015625
Five-eighths	6°	.625		29	.0139
	5°	.5883		30	.0123
	4°	.5416		31	.0110
One-half	3°	.500		32	.0098
	2°	.4452		33	.0087
	1°	.3964		34	.0077
	1	.3632		35	.0069
	2	.3147		36	.0061
	3	.2804		37	.0054
One-fourth	4	.250		38	.0048
	5	.2225		39	.0043
	6	.1981		40	.00386
	7	.1764		41	.00343
	8	.1570		42	.00306
	9	.1398		43	.00272
One-eighth	10	.1250		44	.00242
	11	.1113		45	.00215
	12	.0991		46	.00192
	13	.0882		47	.00170
	14	.0785		48	.00152
	15	.0699		49	.00135
One-sixteenth	16	.0625		50	.00120
	17	.0556		51	.00107
	18	.0495		52	.00095
	19	.0440			

THIRD WIRE-GAUGE REPORT.

THE GAUGE STANDARD ADOPTED BY THE SHEET-IRON MEN OF BIRMINGHAM.

I have twice already, in my dispatches Nos. 90 and 91, referred to the change in the wire-gauge in use in this country, and to the refusal of the sheet-iron men to accept the Board of Trade's new imperial wire-gauge. As I explained in my dispatch No. 91, the sheet-iron men, at a meeting held here on the 28th of last month, unanimously adopted, for their own use, a gauge almost precisely the same as the old Birmingham wire-gauge, which is now to be known as B. G.

I now have the honor to inclose a table of relative weights, according to this gauge, which is likely to be useful in a trade where weights are used almost as much as measurements.

Mr. Richard Heathfield, a leading iron-master of this district, has kindly furnished me with a copy of this table, of which I believe he is the compiler, and has called my attention to the fact that the gauge does not apply to copper or brass, but simply hoops and sheet-iron, copper and brass being used in the table for the sake of comparison.

The table is based upon the assumption that a superficial foot of iron, one inch thick, will weigh 40 pounds. A foot of brass of that thickness will weigh 43.9 pounds, and a foot of copper the same thickness 45.8 pounds.

WILSON KING,
Consul.

UNITED STATES CONSULATE,
Birmingham, March 17, 1884.

TABLE OF RELATIVE WEIGHTS.

Parts of an inch.	No. on gauge.	Proposed thickness.	Weight, in ounces, per square foot.		
			Iron.	Brass.	Copper.
One-half	000	.500	320.000	351.200	366.400
	00	.4452	284.928	312.708	326.243
	0	.3964	253.696	278.431	290.462
	1	.3532	226.048	248.088	258.825
	2	.3147	201.408	221.045	230.612
	3	.2804	179.456	196.953	205.477
One-fourth	4	.250	160.000	175.600	183.200
	5	.2225	142.400	156.284	163.048
	6	.1981	126.784	139.145	145.168
	7	.1764	112.896	123.903	129.266
	8	.1570	100.480	110.277	115.050
One-eighth	9	.1398	89.472	98.196	102.445
	10	.1250	80.000	87.800	91.600
	11	.1113	71.232	78.177	81.561
	12	.0991	63.424	69.608	72.620
	13	.0882	56.448	61.952	64.633
	14	.0785	50.240	55.138	57.535
	15	.0699	44.736	49.098	51.223
One-sixteenth	16	.0625	40.000	43.900	45.800
	17	.0556	35.584	39.053	40.744
	18	.0495	31.680	34.769	36.274
	19	.0440	28.160	30.906	32.243
	20	.0392	25.088	27.534	28.726
	21	.0349	22.336	24.514	25.575

Table of reliable weights—Continued.

Parts of an inch.	No. on gauge.	Proposed thickness.	Weight, in ounces, per square foot.		
			Iron.	Brass.	Copper.
cond	22	.0312	19.968	21.915	22.863
	23	.0278	17.792	19.527	20.372
	24	.0247	15.808	17.349	18.100
	25	.0220	14.080	15.453	16.122
	26	.0196	12.544	13.767	14.363
	27	.0174	11.136	12.222	12.751
urth	28	.015625	10.000	10.975	11.450
	29	.0139	8.896	9.763	10.186
	30	.0123	7.872	8.640	9.013
	31	.0110	7.040	7.726	8.061
	32	.0098	6.272	6.884	7.181
	33	.0087	5.568	6.111	6.375
	34	.0077	4.928	5.408	5.643
	35	.0069	4.416	4.847	5.056
	36	.0061	3.904	4.285	4.470

PRECIOUS METALS IN MEXICO.

REPARED BY THE MEXICAN DEPARTMENT OF HACIENDA AND PUBLIC CREDIT AT THE REQUEST OF MINISTER MORGAN.

nder Secretary of Foreign Relations:

ɜ been informed by your note of the 18th instant that the minis-ə United States had asked from your department various data ɔ subject of the product, coinage, consumption, importation, ɔrtation of precious metals throughout the republic, and the ɜreof, in paper as well as coin, during the year 1883, I have the comply with the wishes expressed, premising first of all that tatistical accounts and tableaux are, according to law, made scal years, the data hereafter given refer to the year 1882–'83, ɔminated on the 30th of June last. It appears to me most con-hat I should make this report in conformity with the questions led by the minister in his note to you, a copy of which has ıished me, giving to each question its respective answer.

hat was the amount of gold coined, in denomination and value?

ıount coined in gold during the fiscal year referred to was as

es of $20	$338,580
es of $10	65,150
es of $5	1,870
es of $2.50	1,000
es of $1	1,000
l	407,600

hat was the amount of silver coined, in denomination and

ıount of silver coined in said year was as follows:

pieces of $1	$23,558,887 00
pieces of 50c	73,479 50
pieces of 25c	331,417 25
pieces of 10c	120,138 20
l	24,083,921 95

(3.) What was the import and export of gold coin and of gold bullion?

There is no official record of the importation of any gold coin or bullion. As regards the amount exported during the year 1882–'83, it was as follows:

Mexican gold, coined	$331,708 00
Foreign gold, coined	148,055 96
Gold in bars	548,039 23
Total	1,027,803 19

(4.) What were the import and export of silver coin and of silver bullion?

Neither is any official record showing that any silver in coin or bullion was imported. The data referring to the exportation of these articles are given below:

Mexican, silver coined	$22,969,383 90
Foreign silver, coined	146,615 59
Mexican silver bullion	4,773,928 15
Mexican mineral stone	562,084 58
Mexican earth	30,104 26
Mexican sulphurated silver	105,512 26
Mexican argentiferous lead	13,025 40
Total	28,600,854 14

(5.) What amount of gold was produced by the mines?

There is no record of the production of mining companies, but from the official reports of the custom-houses and mints the following calculation is made:

Gold coined in the mints	$407,600 00
Gold exported in bars	548,039 23
Total	955,639 23

(6.) What amount of silver was produced by the mines?

Upon the basis of the answer of the question concerning gold the following calculation is made:

Silver coined in the mints		$24,083,921 95
Silver exported in bullion	$4,773,928 15	
Silver exported in stone	562,084 58	
Silver exported in earth	30,104 62	
Sulphurated silver	105,512 26	
Silver exported in argentiferous lead	13,025 40	
		5,484,655 01
Total		29,568,576 96

The production of gold, as well as of silver, is greater than appears from the foregoing figures, as they do not represent the metal which is used in the arts and that which is sent to private houses.

(7.) What was the estimated amount of gold coin in the treasury, in banks, and in circulation, respectively, at the close of the year 1883?

There are no data upon which to answer the foregoing question, and I can only observe that no difference is made in the national offices of the different character of moneys therein, since as they are received at the value which they import to possess, there does not exist in commerce an estimated value of the same, for which reason neither the general treasury nor any other office specifies in its report the class of money which it receives.

(8.) What was the estimated amount of silver coin in the treasury, in banks, and in circulation, respectively, at the close of the year 1883?

The same answer is made to this question as was made to the one th respect to gold.

(9.) What amount of paper currency, Government and other, respect-ly, was outstanding at the close of the year 1883?

The Government has issued no paper money whatever, and with respect the others there exists no record in this department of the amount of e outstanding circulation except that of the national bank, which at e last of December, 1883, amounted to $2,236,897.

10.) Were any laws passed during the year 1883 affecting the coinage, ue, or legal-tender character of the metallic and paper circulation?

No law has been passed affecting the coinage, issue, or legal character metallic or paper currency.

Thus I have the honor to reply to the communication from your de-rtment of the 18th instant, above referred to.

Liberty and constitution.

PEÑA.

MEXICO, *February* 25, 1884.

SALT MANUFACTURE IN TURK'S ISLAND.

REPORT BY CONSUL SAWYER, OF TURK'S ISLAND.

have the honor to communicate some more facts regarding the bus-ss of this colony, which may possibly be of public interest. Of rse, in a place of one industry, and capable of doing about so much iness annually, with no facilities for expansion to any considerable ent, or of adding a new one, there must be so much sameness year year that a report will be dull and monotonous. This must be the e in this colony. Nevertheless, there may be some points that will of use, year by year.

The amount of salt manufactured in the colony for the year 1883 was excess of that of the years of 1881, 1882. There was an excess of ex-ts of the colony over and above the years named in the few other icles which make up the total exports, viz, guano, sponge, &c.

The following is extracted from the report of the honorable commis-ner of the colony, published in the official Gazette here, under date January 28th last past:

ort duties for the year 1883	£2,926	1	5
alty on salt exported, 1883	2,665	3	1
ht-dues collected, 1883	783	7	8
alty on guano, 1883	238	12	0

There are various other sources of revenue, which makes the sum-al of £10,016 14 1 for the year; the expenditure for the same time s £8,019 7 9.

The annual circular of the largest dealers in salt here makes the ship-nt somewhat in excess of the statement of the commissioner, but discrepancy arises in this way: At the close of the year 1882 there re certain vessels in the three ports loading, and the commissioner ced these cargoes in the year 1882, and the circular named classed same with the new year.

t may be of interest to investigate what makes up the total value of t when it reaches a port in the United States. For convenience, the owing statement is given of the cost of a cargo of salt that was pped to Bath, Me., in April last. This is a sample case, and will

illustrate all. I have been at the pains to gather up the items. The ship is of 1,040 tons net. She did not take out all of her ballast, so did not take a full load for that class of vessels, her cargo being 34,270 bushels.

EXPENSES.

Paid by the ship or master—				
On 1,040 tons for light-dues, at 4*d.* per ton, £17 6 8				$83 20
Inward pilotage, £5 2 6				24 60
Pilot for ten days while loading, which is optional, at $2.25 per day				22 50
American consul's bill				10 20
				140 50
Owners of salt paid on—				
34,270 bushels of salt, royalty of 10 per cent. on a valuation fixed by the Government of 7½ cents per bushel	£53	10	11	
Salt pond improvement fund	5	7	1	
	58	18	0	$282 72
Boatage of salt to load vessel, at 1¾ cents per bushel, on 34,270 bushels, £124 18 2				599 72
Invoice				2 50
				884 94

Now add the freight to Boston or Portland or Bath, at 10 cents per bushel, and the American duty of 8 cents per hundred pounds, and we shall approximate the cost when in port, before landing. This cargo of salt was invoiced at 7 cents per bushel, on board. The above expenses by the shipper of the boatage, royalty, &c., make up part of the cost of the salt, for when the salt merchant announces that he will sell a cargo of salt at 7 cents per bushel he includes the boatage, customs dues named, &c. After these expenses are paid, it leaves the owner a little over 4 cents per bushel for his salt on the wharf or beach. For instance, the 34,270 bushels of salt was invoiced at $2,401.65. Deduct the amount that the shipper paid ($884.94) and it leaves $1,516.71, only about 4⅓ cents per bushel on the wharf.

The Government or the Crown owns the fee of the salt ponds, and whenever these change hands there is the reservation that the royalty must be paid. It is practically an export duty, but all pay alike; there is no discrimination for English vessels. The Government reserved the right, and exercises it, of fixing the value on the salt, on which to place the duty; it is now 7½ cents per bushel.

Messrs. Frith & Murphy, in their annual circular, say:

> The shipment in round numbers was 1,710,000 bushels. Of the above 1,371,000 bushels were coarse salt, and the balance in fishery salt; that is, coarse salt crushed or ground to a fineness suitable for curing fish.

Most of this coarse salt was shipped to the United States, and nearly all the fine or fishery salt to fishing ports in Nova Scotia.

The following gives the sum total of the shipments from the three ports comprising this consular district for 1883:

American vessels with salt to various ports in the United States	67
British vessels to Nova Scotia	19
Dutch vessels	1
Total cargoes of salt	87
Loaded with guano	8
Logwood (wrecked goods)	1
Total	96

guano was shipped to Baltimore, and the logwood to New York. of the Nova Scotia vessels are of small tonnage, from 100 to 200 while the American vessels were of a larger class. An average is 4,000 bushels to the hundred tons.

American vessels took out to some of the West India Islands ice, age, lumber, and general merchandise, and called here for return ts. It helps round off the voyage during the summer, when there sugar or molasses freights to be had.

ll add that the salt merchants are watching with much anxiety what the American Congress will do about the tax on salt—it is y high now. How much it would benefit the people here engaged business to have the tax repealed it is difficult to foretell. No it would stimulate the salt-making business to some extent, and some extravagant hopes of large gains as compared to what is he result of the business. The business is so unprofitable that the of the ponds brings very little to those owners who do not work nt them. The sale of this class of property is a difficult matter, one seems inclined to purchase, the general opinion being that almost valueless. Many of the colored people, and some who y work in the ponds, are emigrating to Santo Domingo, where btain better wages. If Hayti and Santo Domingo had stable and l governments they would, in a few years, almost depopulate the of the younger class of working people. As it is, the population island is decreasing in both classes of citizens, the whites going United States and the colored to Hayti and Santo Domingo.

N. K. SAWYER,
Consul.

TED STATES CONSULATE,
Turk's Island, March 10, 1884.

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f exports of domestic produce and manufactures in the years 1881, 1882, *and* 1883.

	1881.	1882.	1883.
	£22,908 10 2	£21,095 6 5	£24,950 0 5
th	697 13 0	1,205 12 8	6,265 16 0
	429 15 11	720 14 0	632 19 5
uit		13 12 0	
rasiletto, &c	280 0 0	296 2 5	285 19 0
tals	24,315 19 1	23,331 7 6	32,134 14 10

VALUE OF IMPORTS FOR THE YEARS 1881, 1882, AND 1883.

	£27,054 4 6
	26,822 11 3
	24,557 13 8

Quantity of salt exported from each port for the years 1881, 1882, *and* 1883.

Ports.	1881.	1882.	1883.
Grand Turk	593,626	659,225	682,741
Salt Cay	478,660	476,530	440,110
Cockburn Harbor	358,610	406,327	582,742
Total bushels	1,430,896	1,542,082	1,705,593

	Bushels.
Salt in the colony to December 31, 1880	700,000
Salt in the colony to December 31, 1881	1,000,000
Salt in the colony to December 31, 1882	650,000
Salt in the colony to December 31, 1883	900,000

Inches of rainfall at Grand Turk, Salt Cay, Cockburn Harbor, and Kew for each month of the year 1883.

Month.	Grand Turk.	Salt Cay.	Cockburn Harbor.	Kew.
January	1.08	1.21	2.53	2.61
February	.83	1.78	1.03	2.47
March	2.60	.77	4.06	1.65
April	1.12	2.76	.24	.64
May	1.10	1.47	1.81	3.08
June	.76	1.09	.40	1.83
July	1.60	.08	1.20	2.91
August	.89	.83	.....	3.55
September	4.72	1.45	3.96	1.98
October	2.34	1.57	1.81	3.96
November	6.74	4.88	4.94	5.48
December	1.67	2.38	1.51	2.50
Total	25.45	20.27	23.49	31.43

Return for the year ending 31*st December*, 1883.

	War vessels.	Steamers.	Ships.	Barks.	Barkentines.	Brigs.	Brigantines.	Schooners.	Three-masted schooners.	Total.
Number and class of vessels that passed through the Turk's Islands passage by daylight	4	2	.....	29	7	1	72	76	30	221
Number and class of vessels that passed the light-house and anchored at Turk's Islands	.....	32	1	17	8	4	56	41	18	177
	4	34	1	46	15	5	128	117	48	398

R. B. LLEWELLYN,
Commissioner.

COMMISSIONER'S OFFICE,
Turk's Island, January 28, 1884.

CHANGES IN THE CANADIAN TARIFF.

REPORT BY CONSUL LANGE, OF ST. STEPHEN.

Resolutions adopted 12th March, 1884.

1. *Resolved*, That it is expedient to provide that the following articles be added to the list of goods that may be entered free of duty when imported into Canada, viz:

Bolting cloths, not made up.

Boracic acid.

Canvas, jute canvas, not less than 58 inches wide, when imported by manufacturers of floor oilcloth for use in their factories.

Cherry-heat welding compound.

Grease and grease scrap.

Indigo, paste, and extract of.

Iron or steel beams, sheets, plates, angles, and knees for iron or composite ships or vessels.

Sodium, sulphate of.

Manganese, oxide of.

Potash, German mineral.

Steel for saws and straw cutters, cut to shape, but not further manufactured.

And to repeal the following items, now on said free list, viz: Colcothar, dry, oxide of iron, fish-plates, steel; and all items or words contrary to, or inconsistent with, the foregoing provisions.

2. *Resolved*, That it is expedient to provide that the following articles shall be subject to and charged with the rates of duty set opposite to each, respectively, from and after the date of the passage of this resolution, viz:

1. Acid, acetic, 25 cents per imperial gallon.

2. Caplins, unfinished, leghorn hats, 20 per cent. ad valorem.

3. Celluloid, molded into sizes for handles of knives and forks, not colored or otherwise manufactured, 10 per cent. ad valorem.

4. Carpeting, matting, and mats of hemp, 25 per cent. ad valorem.

5. Jeans and coutilles, when imported by corset-makers, for use in their factories, 20 per cent. ad valorem.

6. Printed or dyed cottons, not elsewhere specified, 27½ per cent. ad valorem.

7. Cotton, 42 inches wide and over, when imported by manufacturers of enameled cloth, for use in their factories, 15 per cent. ad valorem.

8. Cotton warp No. 60 and finer, 15 per cent. ad valorem.

9. Earthenware, decorated, printed, or sponged, and all earthenware not elsewhere specified, 30 per cent. ad valorem.

10. India rubber vulcanized handles, for knives and forks, 10 per cent. ad valorem.

11. Iron, cast-iron forks, not handled, ground, or otherwise further manufactured, 10 per cent. ad valorem.

12. Labels for fruit, vegetables, meat, fish, and confectionery, also tickets and advertising bills and folders, a specific duty of 10 cents per pound, and 20 per cent. ad valorem.

13. Pins, manufactured from wire of any metal, 30 per cent. ad valorem.

14. Soap powders, a specific duty of 3 cents per pound.

15. Steel, ingots, bars, sheets, under three sixteenths of an inch thick whole or cut to shape, but not further manufactured, and rolled round wire rods in coils, not elsewhere specified, $3 per ton of 2,000 pounds, and 10 per cent. ad valorem.

16. Steel, rolled round wire rods, under half an inch in diameter, when imported by wire manufacturers for use in their factories, 5 per cent. ad valorem.

17. Steel, needles, viz: cylinder needles, hand-frame needles, and latch needles, 30 per cent. ad valorem.

18. Sugars, sirups, and molasses. Sugar, when imported direct, without transshipment, from the country of growth and production, above No. 14 Dutch standard, a specific duty of 1 cent per pound, and 32½ per cent. ad valorem. Equal to No. 9 and not above No. 14 Dutch standard, a specific duty of three-fourths of a cent per pound, and 27½ per cent. ad valorem. Below No. 9 Dutch standard, a specific duty of one-half cent per pound, and 27½ per cent. ad valorem.

19. Melado, and concentrated melado, three-eighths of one cent per pound, and 27½ per cent. ad valorem. On all the above sugars, melado and concentrated melado, when not imported direct, without transshipment, from the country of production.*

20. Above No. 14 Dutch standard, a specific duty of 1 cent per pound, and 35 per cent. ad valorem. Equal to No. 9 and not above No. 14 Dutch standard, a specific duty of three-fourths of 1 cent per pound, and 30 per cent. ad valorem. Below No. 9 Dutch standard, a specific duty of one-half cent per pound, and 30 per cent. ad valorem.

21. Melada and concentrated melada, a specific duty of three-eighths of one cent per pound and 30 per cent. ad valorem.

22. Concentrated cane-juice, concentrated molasses, concentrated beet-root juice, and concrete, whether imported direct or not, a specific duty of three-eighths of a cent per pound and 30 per cent. ad valorem.

23. Sirups, cane-juice, refined sirup, sugar-house sirup or sugar-house molasses, sirup of sugar, sirup of molasses, or sorghum, whether imported direct or not, a specific duty of five-eighths of a cent per pound and 30 per cent. ad valorem.

24. Molasses, other, when imported direct, without transshipment, from the country of growth or production, 15 per cent. ad valorem on the value thereof free on board.

25. Molasses when not so imported, 20 per cent. ad valorem. The value upon which the ad valorem duty shall be levied and collected upon all the above-named sugars, melada, sirups, molasses, &c., shall be the value thereof free on board, as provided by section 77 of the customs act, 1883.

26. Zinc, chloride, salts, and sulphate of, 5 per cent. ad valorem.

3. *Resolved*, That it is expedient to repeal all such parts of the act 42 Victoria, chapter 15, and of the acts amending the same, or of the schedules of such acts, as impose a duty of 20 per cent. ad valorem on "mill irons and mill cranks, and wrought forgings for mills and locomotives, and parts thereof, weighing 25 pounds or more, and on stationery of all kinds, not elsewhere specified," or which impose any other duty of customs on dyed cotton, jeans, coutilles, cambrics, silicias, and casbans, and on any of the foregoing articles, than those imposed thereon by these resolutions, or which admit any such articles free of duty when imported into Canada.

* Given as in the consul's report.

4. *Resolved*, That section 8 of the act 42 Victoria, chapter 15, be repealed, and the following enacted:

8. An allowance may be made for deterioration by natural decay during the voyage of importation upon perishable articles, such as green fruits and vegetables imported into Canada, but in assessing the same and estimating the damage by breakage upon brittle goods, such as crockery, china, glass, and glassware, under the provisions of sections 53 and 54 of the customs act of 1883, such allowance or damage shall only be made and allowed for the amount of loss in excess of 25 per cent. of the whole quantity damaged, and only in case claim is made therefor, and the loss or damage certified upon examination made by the appraiser or proper officer of customs within three days of the landing or arrival of such goods at the port of destination thereof; and provided the duty has been paid on the full value thereof, on application to the minister of customs, a refund ot such duty may be allowed and paid in the proportion and in fulfillment of the conditions above specified, but not otherwise.

PAUL LANGE,
United States Consul.

UNITED STATES CONSULATE,
St. Stephen, N. B., March 17, 1884.

FISHERY EXHIBITION AT LONDON.

REPORT BY CONSUL-GENERAL ANDREWS, OF RIO JANEIRO.

I have the honor to inclose a slip from the Jornal do Commercio, of this city, of the 12th and 14th instant, comprising a sketch by Baron Zincke of the recent fishery exhibition at London, together with a translation of a few paragraphs of the concluding part, in which the writer bestows high praise on the Commissioner of Fisheries of the United States, and points out the distinguished position which our country occupies in the fishery industry. From the way in which the sketch was published I supposed it had been furnished by a Brazilian on the spot, and it was not till after the inclosed translation had been made that I learned that such was not the fact, and that the sketch had been translated into the Portuguese for the Jornal do Commercio.

C. C. ANDREWS,
Consul-General.

UNITED STATES CONSULATE,
Rio de Janeiro, Brazil, December 14, 1883.

THE UNITED STATES AT THE FISHERY EXHIBITION, LONDON, 1883.

[Extract from a sketch by Baron Zincke, published in the Jornal do Commercio, Rio de Janeiro, December 12 and 14, 1883.—Translation from the Portuguese.]

The most interesting and best prepared paper in the official catalogue is that which emanates from the Commissioner of the United States. It is remarkable for the clearness with which it gives all the information which can be desired, and at the same time showing the author's bases of calculation. Thus, in no other part do we find separately stated the remuneration obtained by fishermen and the prices of the market. It is here seen that in 1880 the figures representing the first category, that is, the pay of fishermen, reached £9,000,000, and that in the past year, owing to the increase of quantity and price of the whole market, it reached the very large sum of £20,000,000, or half a millard in French money. By the excellence of their apparatus, the size and arrangement of their vessels, the extent of their waters, and the value

of their fish the people on the other side of the ocean have placed themselves at the front of this industry. This is a highly significant fact when we remember the dearness of the hand labor in the United States, remembering that all the disposable hands are employed in rendering habitable the new continent, which is still undergoing settlement. To state the actual truth, there is no other country where nature has afforded such a vast and magnificent field for fish. It in effect comprehends two oceans, which are open to American enterprise from the Arctic to the Antarctic zone; and in these two zones the intrepid fishermen of New England pursue the whale and the seal. Their proper eastern and western coasts extend to the extremities of Florida and California, or almost to the tropic of Cancer. Their great lakes, their gigantic rivers, and the vast extent of their coasts yield fifteen hundred different species of fish.

SUGAR REFINING AT CARDENAS.

REPORT BY COMMERCIAL AGENT NUNEZ.

I have the honor to inclose herewith the recent report of the board of directors of the sugar refinery of Cardenas, an incorporated company, to the general meeting of the stockholders, December 10, 1883, together with a translation of the same from Spanish into English.

From this report it will be seen that the building and apparatus had so far progressed at the date of the report that the 1st of January, 1884, was suggested as the probable date of commencing practical operations, but in this the directors have been disappointed, as it is now likely to be April 1 before the hope then entertained will be realized.

Sugar refining has been attempted twice before on this island, at Matanzas and Havana, but hitherto without success, owing to the absence of advanced facilities, the insufficiency of practical knowledge, and the inadequacy of capital and confidence.

This attempt at Cardenas is inaugurated under much more favorable auspices than its predecessors, and all who are interested in it feel very sanguine of the result answering and more than answering every reasonable expectation and redeeming every promise made by the gentlemen who first undertook to carry it through.

The capital subscribed is ample for the object proposed; the stockholders are generally responsible merchants; the administrator is a gentleman of much commercial knowledge, of enlarged views, and practical experience; the superintendents of the different departments are familiar with every detail of their duty, having acquired their knowledge through responsible service for years in first-class refineries in Europe and the United States; and the acting president is a gentleman admirably qualified for the supreme management of such an establishment or for the control of any industry requiring knowledge, education, graciousness, and fine administrative abilities.

If this refinery should have the success hoped for, it would be the nucleus of others in different parts of the island, which could readily manufacture for island consumption all the refined sugar required, and, with the advantages offered by the mother country, the growing industry may, and probably will, supply the entire demand of Spain for sugar in all its various forms.

What influence these ulterior results might have upon the saccharine question in the United States is a matter worthy, perhaps, of some thought even at this time.

JOSEPH A. NUNEZ,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Cardenas, Cuba, February 22, 1884.

Report of the board of directors of the Sugar Refinery Incorporated Company of Cardenas, presented to the general meeting of the stockholders, December 10, 1883.]

Gentlemen stockholders:

In addressing the stockholders for the second time, the board of directors, in conformance to what is required in Article 10 of the statutes, have the satisfaction to be able to announce the near termination of the work of installation of the establishment the object of our enterprise, whose industrial operations you will inaugurate, according to all probability, at the beginning of the month of January; and to your consideration and examination the directors are about to submit a review of the works completed since the last general meeting, the progress realized, the disbursements made, the financial state of the company, and the auspicious future which, in our judgment, is indicated by the business we have undertaken.

Although in the last general meeting, which was held a year ago, the hope was expressed of obtaining within a short time the machinery from manufacturers of established reputation, and to have the work completed so as to be able even to handle the sugars of the past crop, that hope it was not possible to realize, for the same causes that had prevented the realization of the hopes of the previous year with reference to contracts for machinery, and among which appeared, in the first instance, the accumulation of work in the principal houses that manufacture machinery. In fact, when at the end of several months, after negotiating with the house of C. Hickman, of Berlin, through their representative in Havana, we came to the point of signing a contract which would have met the expectations of our directory, when the said Berlin house announced by telegraph their inability to deliver the machinery required before the month of March, 1884.

Not being able to admit for this enterprise so much delay, and not, under the circumstances, having any other resource, the directory then entertained a proposition presented by Mr. Latassa, of New York, to whom direction had been given to examine new the factories of the United States, by whom it was offered to have the refinery completely finished and ready for work by the end of December of the present year; and examining carefully this proposition, after the necessary explorations were over, the contract was at last signed in this city on the 19th of April last, for the amount of $152,000, gold, of which $76,000 has been already paid, and $76,000 remains, with some small increase for additional work amounting altogether to $1,599, in seven monthly equal payments, from February 2 to August 2, 1884, both dates inclusive.

There is in the contract two articles that the directors trust the stockholders will see with pleasure, and they are as follows:

"*Second.* This machinery has to be placed on the ground belonging to the refinery, in the city of Cardenas, as arranged to the plans that are prepared by Messrs. Robert Beely & Co., of New York, and have to be presented to the company at the shortest time possible, being understood that Mr. Latassa has to furnish said machinery, and if it should not prove sufficient, to furnish all further machinery that may be necessary for the production of the minimum of 40,000 kilograms of granulated refined sugar, and in small blocks as molded by the system of Hersey, the same to be the daily average of the working of the refinery."

"Fifth. Mr. Latassa guarantees that the apparatus shall not only work satisfactorily, but it is to be constructed of the best materials, and to be of first-class workmanship in all respects, he guaranteeing also its capacity of production as much as the yield of the crude sugars, and the quality of the refined must not be inferior to the average that is obtained at the well-mounted refineries, with all the most advanced modern improvements."

The gradual accomplishment of the contract on the part of Mr. Latassa was in accordance with expectations, and was successively performing, first, the plan of the building necessary for the initiation, and for the bases and locations of the different apparatus, subsequently placing the appropriate machinery in successive arrivals, the last arrival at the port being in the barkentine Alexander Campbell on the 30th of the past month (November), with all that was wanting for the completion of the work, without any special demurrage, for which reason the same was given in charge to Mr. Latassa, already in the way of execution, by the schooner May O'Niel, with the arrival of animal charcoal for the first year, and the fuel and bands necessary for the first week's work of the establishment.

As fast as the plans were received and approved by the directory it employed itself with all vigor in the execution of the works of the factory, carried to the end in the most satisfactory and economical manner, providing as well for the foundation and bases for the position of the machinery, the walls of hewn stone, the arrangement of floors, roofs, doors, and windows of all the buildings, much of which work was done by special contracts under the personal supervision of the board of directors; and the rest of it was let out in general contracts.

All of the materials that have been brought from abroad have enjoyed the privilege accorded by the Government of passing to the uses of the refinery free of import duties.

All these works of construction and installation are advanced as far as was possi-

› in the short time that has passed since they were commenced. The prin-
ing, the refinery proper, is built of hewn stone, and is 37.80 meters* long
eters wide, with 15.24 meters of elevation, divided in five stories or floors,
ving the roof; and the one that has been built of the same materials, for the
vivify the animal charcoal, is 13.41 meters long by 10.36 meters wide, and
only the plastering of its walls. The department of the steam-boilers,
ise of hewn stone like those before mentioned, is 32.41 meters long by 12.50
le, and is ready to receive its roof; and the department of dissolution of
which construction is also of hewn stone, 18.96 meters long by 16.20 meters
ewise ready to receive its roof, and we are expecting to have all these
hed in the course of ten or twelve days.
erence to the installation or arrangement, we have finished the boilers,
nexplosive tubes of the system patented by Babcock and Wilcox, as is
ished the ovens.
lters of animal charcoal that are closed by pressure are also finished, and
e the arrangement of the tubes and corresponding keys.
allation of the dissolution boilers is nearly finished, and at its completion
completion of the apparatus to wash hogsheads by steam.
ium apparatus is also entirely completed, having ready the foundations for
ery, pumps, centrifugals, and mixers, all of which are at this moment be-
.
neral meeting which took place December 4, 1882, in which was reported
ions of the preceding year, the attention of the stockholders was called to
tageous conditions of the price and terms of payment for the properties
h the company had established the refinery.
void of interest to report now that the purchase, by itself, constitutes an
ous investment, considering the circumstances of the locality, for its vast
the facility and economy which is used for the operation of the factory,
enlargement in case of necessity, and these combined advantages it would
, if not impossible, to find elsewhere for an establishment of this kind.
now demonstrate the cost of the work accomplished up to October 31,
inated the second year of the society's existence, by showing the general
companying this report, disclosing the disbursements, as estimated, to put
shment in a complete state of operation.
nstruction of the principal wharf has 235 meters in length, with a double
the center, with the necessary switches to do simultaneously all the opera-
ding and unloading, including that of the charcoal for fuel, with two plat-
and low, of 80 meters long, and two cranes, all in a perfect state of serv-
which have occasioned an expenditure of workmanship and materials of
and adding the cost of the old wharf, which it was necessary to destroy
ess condition ($8,609), a portion of which material has been used, making
$23,671.76.
truction of the four above-mentioned buildings for the establishment of
y, the materials, workmanship, including the masonry and excavations
the machinery, boilers, ovens or furnaces for revivifying animal charcoal,
$27,069.23; disbursements calculated for these works till they shall be en-
pleted, $16,084; amounts paid to contractors on account of their respective
$8,916; and adding the cost of the two buildings destroyed by fire before
se, on which location has been erected the refinery proper and the depart-
ssolution, $1,333.33, we obtain a total of $53,402.56.
nses of different kinds since the definite establishment of the company since
1882, until October 31, 1883, including fees to the register of property, sal-
administrator and employés, food, and other expenses for the laborers, taxes,
ll these things have been paid (gold) $14,846.47; and 125 shares of stock
o the initiator of the enterprise, $12,500; amount of expenses of installation,
adding to this sum (gold) $27,346.47, wages of the laborers, and other
o January 31, $4,600, besides estimated incidentals, $3,316—total expenses
tion, $35,262.47.
een calculated that besides these amounts stated as probable expenses
ctual operation commences, in order not to make a mistake in the expenses
nth of January, instead of the 31st of December, which has been stated,
ave to make the following disbursements with the contractors of the ma-

	Gold.
plete Edison electric light apparatus, all set up	$4,000
n of chemical laboratory	800
apparatus for the filters	600
r the service of factory	200
l	5,600

* A meter is $39\frac{37}{100}$ inches, or 3 feet $3\frac{1}{4}$ inches.

Resuming the preceding data, which exists in the balance, the establishment of the refinery, in the moment of commencing practical operations, will be as follows:

	Gold.
Immovable property (real estate), old buildings, and wharf	$60,764 20
New constructions	53,402 56
Utensils	4,630 46
Expenses of installation	35,262 47
Machinery	153,599 00
Electric light	4,000 00
Laboratory, auxiliary apparatus, and utensils of service	1,600 00
Total	313,258 69

And being the agreed partnership capital, $360,741.31; and in realizing this capital we shall have in cash, or its equivalent, $46,741.31; and adding to this the mortgages payable in 1884, 1885, and 1886, $30,893.94; and the ground rent recognized on the property, $2,250; we have, in gold, $79,855.25, besides the semi-annual payments of February and August, $77,599, making a total of $157,484.25.

Starting from the same date, let us see what is the actual financial situation.

		Gold.
Cash on hand and in bank (bank bills, $2,077.90)		$9,048 82
Converting the bills into gold at 115 per cent		966 46
		10,015 28
In possession of D. T. Latassa		8,055 09
Bills receivable to collect		1,056 00
		20,026 37
Subscribed stock to be collected		75,040 00
		95,066 37
Payments computed until completion of installation:		
Constructions	$16,084 00	
Wages, salaries, and expenses	4,600 00	
Illumination laboratory and utensils	5,600 00	
Incidentals	3,316 00	29,600
Cash to operate with		65,466 37

It will be sufficient to collect the balance of the subscribed capital, or substituting with new subscriptions such as—for different reasons caused by the critical financial condition of the country—are uncollectible.

There will be no necessity to dispose of the shares which the company has in reserve; such shares should not consequently be offered in the market until the first week's work shall show practically the industrial result of the enterprise.

It cannot be doubted that the definite outcome will be highly satisfactory. Our refinery will produce 40,000 kilograms* of refined sugar per day, which, in twenty-five days per month, make 1,000 tons, and admitting two months' suspension during the year, we shall have ten months of activity and a production of 10,000 tons, which is the sixth part of the entire consumption of sugar of all kinds in the island.

The board of directors propose to offer refined sugar to the public in packages of 50 and 100 kilograms' weight, to put it within the reach of all families and to establish agencies in the capital and in all the principal cities of the island, in order to extend and popularize the consumption; and the board of directors does not hesitate to state that the manufactory will easily dispose of the maximum of its elaboration or capacity.

But if the consumption of this country should not equal our capacity to produce, such are the economical conditions upon which we can offer our sugars for exportation, owing to the excellency of the apparatus which we have selected and the method of refining adopted, that we are certain to create a demand from the Peninsula and other countries that need refined sugars.

As a demonstration of what has been said, it is sufficient to know that scrupulous calculations made by the administration, according to the data forwarded by the director of the manufactory, under guarantee of the constructors of the machinery, the transformation of centrifugal sugars of 95 to 96 degrees into refined cubes equal to those elaborated in the principal refineries in the United States will not cost more

*A kilogram is 2¼ pounds avoirdupois.

than 2½ rials per arroba (25 pounds), including waste and all expenses; and to such persons who are familiar with the prices of sugar and the consumption of the island, it will not be hazardous to express the hope that the next general meeting of the stockholders will be convinced of our having established, in practical operation, a first-class industry.

Cardenas, December 10, 1883.

S. DE LA VEGA,
Administrator.

Approved.

JOAQUIN DE ROJAS,
Acting President.

POTASH INDUSTRY OF STASSFURT.

REPORT BY CONSUL FOX, OF BRUNSWICK.

I have the honor to transmit herewith a translation of a report upon the last year's potash business of Stassfurt kindly furnished this office by Messrs. R. Keichsel & Co., of Magdeburg. The report cannot fail to be of great interest to those concerned in this trade; and I take great pleasure in requesting that the same be published in an early number of the consular reports.

WILLIAM C. FOX,
Consul.

UNITED STATES CONSULATE,
Brunswick, March 15, 1884.

REPORT.

In marked contrast to the year 1882, which was one of unusual prosperity and special brilliancy for the Stassfurt potash industries, the year 1883 opened with dark prospects for the future, so that many manufacturers were unable to shake off the concealed fear of a repetition of the former state of affairs, which unlimited production and open competition had previously brought about. The newly established potash work Schmidtmannshall at Aschersleben was opened at the beginning of the year, and the work on the sixth mine, Ludwig II, was being rapidly pushed. The question in regard to the future fate of the syndicate, spoken of in our last year's report, became more and more a burning one, which earnestly demanded solution. The Westeregeln mine, taking advantage of their right to do so, on June 30 gave notice of their intention to dissolve the contract upon the grounds that the Aschersleben mine had reached a daily production of 5,000 centners Carnallit, and the contract ended September 30. This was the signal for the commencement of a chain of difficult negotiations in the endeavor to obtain a new "*modus vivendi*" for the six mines, which would relieve them from the effects of a bitter competition. The particulars of the negotiations show them to have been of the most difficult nature, especially as the Government of Anhalt, which had unavoidably to lose a large share, claimed indemnity in the form of higher prices for Carnallit, which demands were energetically opposed by the Prussian Government as protector of German industry and agriculture. Thanks to the clever direction of the negotiations on the part of Prussia, the matter was finally settled on the 15th of October, and the original demands of the several mines, 25 per cent. of the production for Prussia, 33 per cent. of the production for Anhalt, 20 per cent. of the production for Aschersleben, 16⅔ per cent. of the production for Westeregeln, 16⅔ per cent. of the production for Neustassfurt, 10 per cent. of the production for Ludwig II, were reduced to the following:

Anhalt, 24 per cent. of the production +1,000 centners per day extra, against 50 per cent. of the former convention.

Prussia, 20 per cent., against 27½ per cent. + 2,000 centners per day.

Westeregeln, 15½ per cent. + 750 centners, against 12½ per cent. + 1,500 centners per day.

Neustassfurt, 15½ per cent. + 750 centners, against 10 per cent. +2,00 centners per day.

Aschersleben, 17 per cent.

Ludwig II, 8 per cent.

Pending the opening of Ludwig II (about July, 1884), its quota is to be divided between Westeregeln, Neustassfurt, and Aschersleben, each 2¾. This new convention is to exist for the term of five years, to the end of 1888, and can be dissolved only in case a new potash mine should be opened in the German Empire having a daily production of 3,000 centner Carnallit. This dangerous obstacle was, therefore, surmounted at the same time the price of 50 pfennig per centner for raw salt for the first half of 1884 was retained, thereby giving the impulse to the keenly looked for muriate of potash sales. An entirely unexpected turn of affairs now came about, and a perfect surprise was in store for the users of muriate of potash. The association of manufacturers of this article (immediately following the mines) came together for the purpose of including in the association all those factories not previously connected with it, in order to unite against competition, and to place the consumer in a dependent position. The formation of a single association of all the muriate of potash manufacturers, three salt works and thirteen manufacturers, was accomplished without any special difficulty, in view of the fact that the capacity of the muriate of potash factories had been considerably increased through the joining of the salt works at Neustassfurt, and that the production was largely in excess of the demand. (There are five factories not included in the association, because all they make they refine themselves.) Therefore, every individual factory was desirous of obtaining the highest possible price in order to set off the forced limitation in production which was absolutely necessary if the industry were to be a paying one. The above mentioned sixteen salt works and manufacturers established a bureau for the selling of muriate of potash at a minimum price, which commenced business December 15. The prices for the first semester, 1884, commenced as follows:

	Marks.
Minimum 80 per cent. muriate of potash	6.65
Minimum 85 per cent. muriate of potash	6.70
Minimum 88 per cent. muriate of potash	6.75
Minimum 90 per cent. muriate of potash	6.80
Minimum 95 per cent. muriate of potash	6.90
Minimum 96 per cent. muriate of potash	6.95
Minimum 97 per cent. muriate of potash	7.00
Minimum 98 per cent. muriate of potash	7.10

per 50 kilograms and 80 per cent. basis, including sack; terms, net cash without discount, but 1 per cent. allowance on contracts for 24,000 centner at single purchase. The future must decide whether this step towards an apparent potash monopoly was a wise one or not.

Passing over to the discussion of the market during the past year, we must lay stress upon the fact that the dull situation brought over from the year 1882 continued throughout the whole year. This is chiefly to be attributed to the uncertainty as to the result of the syndicate question; a large majority doubted that it would reach perfection at all. The Carnallit production, which amounted at the close of the year 1882 to 72,000 centner daily, was reduced at the beginning of this year to a daily sum of 65,000 centner; this was to prevent an increase of the muriate of potash stock on hand, which amounted then to 100,000 centner. The stock on hand nevertheless increased, so that at the end of February it amounted to 200,000 centner; a further reduction to 50,000 centner, to take effect April 1, was therefore made. The selling price for minimum 80 per cent. muriate of potash, delivery January-December, 1883, was limited by the convention of January 5, 1883, to 6.75 marks, including sack (60 pfennig, dearer than that with which delivery business for 1882 began), after the larger part of the production of the smaller concerns had been sold at similar prices. For immediately deliverable muriate of potash at the beginning of January 6.90 marks was paid, and at the end of February, 7.20 marks, including sack, in exceptional cases. It fell in March to 6.85 marks, and for July-December the price was 6.50 marks. The stock on hand had reached its maximum about the middle of the year, viz, 300,000 centner, and the market showed itself more and more favorable to the buyer, so that finally 80 per cent. ware was to be had at 6.10 marks. This was the bottom price. The nearer the year approached its end and the fatal moment, January 1, 1884, was in sight, when every consumer would be bound to the selling price of the syndicate, with no possibility of doing business in any other way with the manufacturers, the more brisk was the trade, so that nearly the whole stock on hand was sold at from 6.20 marks to 6.40 marks for 80 per cent. ware, and the consumers covered themselves to a large extent far into 1884. Notwithstanding these large demands at the last moment, this year's production did not reach that of the previous year, as the following table shows:

Places of production.	1881.	1882.	1883.
Stassfurt	3,730,000	5,497,000	3,856,000
Leopoldshall	7,205,000	10,000,000	6,991,000
Neustassfurt	1,921,000	2,741,000	2,385,000
Westeregeln	2,040,000	2,943,000	2,507,000
Aschersleben	.....	.....	3,229,000
Ludwig II	.....	.....	36,000
Total centner at 50 kilograms	14,896,000	21,181,000	19,004,000

The development of the kainit industry presents a very happy picture, which shows an increase of one and one-half million centner in comparison to the previous year, as follows:

Places of production.	1881.	1882.	1883.
Stassfurt	1,508,000	1,261,000	2,244,000
Neustassfurt	1,594,000	1,543,000	2,049,000
Aschersleben	.....	.....	252,000
Leopoldshall	3,800	.....	.....
Total centner at 50 kilograms	3,105,800	2,804,000	4,545,000

We cannot, however, banish the idea that the larger part of this increase will have to be carried over into the new year; all channels appear to be closed, so to remain for some time, at least as far as foreign countries are concerned, and they are the chief consumers of the potash salts as well as of kainit. German agriculture is noted with using about 1,000,000 centner of this year's production, and though the use of these fertilizers has increased, they do not yet receive such attention as would be expected should be the case, when it is considered that every now and then demands are made for an export duty. We have full faith that our Government will not listen to these whisperings of the agrarian party, and as long as our potash industry is dependent upon foreign lands for purchasers, and the German agriculturist does not himself wake up to the necessity of using his manure to a larger extent, until then it is the duty of the potash industry, in its own interest, to protect itself against any wanton and extravagant demands which would hinder the sales abroad. According to our estimate about 6,000,000 centner of salt products, viz, muriate of potash, kainit, manure salt, kieserit, and chloride of magnesia, to the value of 18,000,000 marks were exported last year to America, France, Belgium, Great Britain, Italy, Scandinavia, Russia, Austria, and Spain. About 200,000 centner of manure salt, 250,000 centner of chloride of magnesia, and 350,000 centner of kieserit were produced, and found market in foreign lands. The going into effect of the syndicate will cause an important change in the production of kieserit, as it will be largely limited, since Neustassfurt and Aschersleben produce none out of muriate of potash residuum, but use this latter as the cheapest material for filling up those gangways in their mines in which work has ceased.

GENERAL TRADE REGULATIONS OF COREA.

REPORT BY MINISTER FOOTE, OF SEÓUL.

I have the honor to transmit herewith a translation of the general regulations and rates of tariff under which trade is to be conducted in Corea.

LUCIUS H. FOOTE.

LEGATION OF THE UNITED STATES,
Seóul, January 3, 1884.

AL REGULATIONS UNDER WHICH TRADE IS TO BE CONDUCTED IN COREA.

I.

arrival of any merchant vessel at an open port of Corea, officers of the cus-
y be sent on board, and they may seal or lock the vessels, hatches, and all
ces where cargo is stowed.
stoms officers shall be treated while on board with civility and be furnished
table accommodations; but in case there be no accommodations available, the
ers may either remain in a boat or on shore, as best suits their convenience;
intenance shall be supplied from, and all their expenses shall be defrayed by,
m-house.
tuity from the captain or agents is allowed to be received by the customs

II.

aster or agent of a merchant vessel arriving at an open port of Corea will
e ship's papers and the bills of lading at the consulate of the vessel's nation-
taining a receipt for the same. Should there be no consular representation
ssel's nationality the papers and bills of lading will be deposited in the hands
mmissioner of customs.
aster or agent will, within forty-eight hours after anchoring (Sundays and
blic holidays excepted), present to the custom-house the consular receipt, the
port, and the import manifest of the vessel's cargo, and also a list of the ship's
nd all other duty-free articles not being merchandise. If the master fail to
vessel within the time specified he shall pay a fine of $60, and should such
be continued he shall pay a fine of the same sum for each period of twenty-
rs during which he shall fail to enter his vessel; but the total amount of such
ll not exceed $200. The entry report shall set forth the name of the ship,
d tonnage (or carrying capacity in peculs), the name of the master, the
of the crew, names and number of passengers, name of the port from which
el sailed, and the dates of arrival and departure, which report shall be signed
aster.
nport manifest shall set forth the marks and number of the packages, descrip-
he goods, and names of the owners, and shall contain in addition, a declara-
ed by the master, or the agent of the vessel, setting forth that such state-
true.
st of the ship's stores and duty-free goods shall also be signed by the master
gent of the vessel.
e reports and other documents may be written in either the Corean, Chinese,
, or Japanese langauges.

III.

omission or error be found in the manifest, it may be supplied or corrected
wenty-four hours (Sundays or other public holidays excepted) after entry in-
but for any alteration or correction to the manifest after that time, a fee of
l be paid; if after that time, double import duty will be imposed on all goods
which are either omitted or erroneously entered on the manifest.

IV.

a vessel has been duly entered inwards, the commissioner of customs shall
ermit to open hatches.
aster shall exhibit this permit to the customs officer on board, and shall re-
m to unfasten the hatches and other places containing cargo. Should the
seals on the hatches, &c., be opened or unfastened without permission, the
without regard to the person who committed the offense, shall pay a fine of

V.

erson desiring to land or ship cargo shall make application at the custom-
resenting, at the same time, invoices thereof.
nvoices shall set forth the place where the goods were purchased, the original
e packing expenses, commission, insurance, transport, and other miscellaneous.

charges, and shall be signed by the purchaser, shipper, owner or agent; and the custom-house shall thereupon issue a permit to load or to ship the cargo.

Such permit shall be presented to the customs officers on board, before shipping or unloading the cargo. Any person desiring to transship cargo shall likewise obtain a permit from the custom-house for that purpose before so doing.

The entry shall be in writing, and shall set forth the name of the ship, the marks and numbers of the packages, and description, quantity, and value of the goods contained therein, as described in the invoices, and declaring that nothing has been concealed whereby the customs of Corea would be defrauded; and the applicant shall sign his name to such entry.

VI.

No cargo shall be unladen, shipped, or transshipped between sunset and sunrise, except by special permission of the customs authorities; and the entrances to the hold and other places where cargo is stored may be secured by the customs officers between sunset and sunrise by fixing seals or locks. If any person shall open or break such lock, or other fastenings, without permission of the customs authorities, the master of the vessel shall pay a fine of $60.

VII.

If any person shall unload, ship, or transship any goods without permission from the customs authorities, or shall land or ship any goods at any place outside the limits fixed for that purpose, such goods shall be confiscated.

VIII.

Goods intended for importation or exportation shall, on passing through the custom-house, pay duties according to the tariff annexed to these regulations, and so shall articles intended for ship's use, if landed and sold.

Import duties payable ad valorem shall be calculated on the actual cost of the goods at the place of production or fabrication, with the addition of the cost of transportation, insurance, commission, and all other charges from the place of production to the port of discharge.

The sum thus obtained shall be regarded as the dutiable value of the goods upon which the rate of duty provided in the tariff shall be levied.

IX.

In case of any deficiency or surplus in payments of duties, the customs may enforce the payment of such deficiency, or the party making payment may claim the refund of such surplus, as the case may be, at any time within thirty days from the date of payment; but no refund or surplus shall be allowed in consequence of any deficiency or damage to goods, after such goods have been once passed through the custom-house.

X.

Customs officers may examine the whole or any part of any goods intended for exportation or importation, and for this purpose may take them to the customs jetty, and all expenses may be borne by the merchant.

However, should goods be ordered to another place, which is not generally used for the examination of merchandise, then the expense of such transportation shall be borne by the customs authorities.

The customs officers should be careful with the goods, in order to cause no injury to them. Any such damage caused by negligence shall be made good by the customs. After the examination, the goods shall be repacked with care, and there shall be no unreasonable delay.

XI.

If the commissioner of customs is dissatisfied with the value placed by an importer or exporter on any of his goods, he shall levy duty on the value given by the customs examiner, but should the owner of the goods be dissatisfied with this, he should within twenty-four hours report his reasons for such dissatisfaction to the commissioner of customs, and shall appoint an appraiser of his own to make a reappraisement and report to the customs the value of the goods as determined by such appraisement.

The commissioner of customs will then, at his option, either levy the duty on the

ue thus determined, or purchase the goods from the importer or exporter at the ces thus determined, with the addition of 5 per cent. In the latter case the pur- se money shall be paid to the importer or exporter within five days from the date which the value determined by the merchant's appraiser was reported to the toms.

XII.

f any goods are damaged on the voyage of importation the importer of such goods y report the facts of the case to the custom-house, and he may have the damaged ds appraised by two or more competent and disinterested persons, who, after due mination, shall deliver a certificate setting forth the amount of damage on each kage, describing the packages by remarks and numbers.
he importer may present the certificate to the custom-house, together with his lication, and request a corresponding reduction of the duty, but such certificate l not prevent the customs authorities from appraising the goods in the manner pro- ed in Article XI.

XIII.

f any dutiable articles not set forth in the application shall be found concealed in r package of goods, with intent to evade the payment of duty, such articles shall confiscated.
ny person who shall present at the custom-house any document containing a false cription or quantity of goods, or shall insert any dutiable articles in the list of ty-free goods, with the intent of evading the payment of duty, or any portion reof, shall, in addition to paying the regular duty, be liable to pay five times the ount of duty sought to be evaded.

XIV.

o application for a permit is required for landing or shipping personal effects of p's crew or passengers' baggage; but the customs officers may examine such private cts, and if any dutiable goods are found amongst them in such quantity that they not be considered for personal use, the proper duty shall be levied on the same, ording to the tariff, and should any prohibited articles be found concealed among h private effects, the same shall be confiscated, and in case of opium, the penalty ll be the same as provided in Article XXXV.

XV.

duty shall be levied on any articles or goods imported for the use of foreign le- ns, and the same shall be allowed to pass the custom-house without examination.

XVI.

ds of an explosive or otherwise dangerous nature shall not be allowed to be or shipped except at places designated for that purpose.

XVII.

ods imported into an open port of Corea on which the duties have been paid transported into any port of Corea without the payment of any tax or transit atever.
ll Corean produce may be conveyed from any part of Corea to any of the open thout being liable to any tax or transit duty.

XVIII.

person who has imported merchandise and paid the duty thereon desires to the same to another port, the customs authorities shall deliver to him a cer- ting the fact that the duty has already been paid on such merchandise, shall be found on examination that the packages have not been opened, ds substituted or concealed with the original articles.
oms authorities, of the port of destination of such goods shall not levy al duty thereon, if they find the goods correspond with the certificate. owever, any goods have been substituted for the original goods or been erein, in addition to the proper duty payable upon the goods so substi- ealed, a fine equal to five times the amount of such duty may be im-

XIX.

Should it be desired to re-export any imported goods which have already been delivered to the consignee, the customs authorities shall allow them to pass duty free, provided such goods should be proved to be imported goods.

XX.

Corean produce reimported by a merchant vessel into any of the open ports in Corea shall be allowed to pass duty free, provided the quality and condition of such goods remain the same as at the time of exportation, and provided further that no more than three years have elapsed since the time of exportation, and that the importer shall produce the shipping permit received at the time of exportation, and shall prove that such goods are of Corean production.

XXI.

The mercantile marine of Corea not yet being in a condition to carry on satisfactorily the coastwise trade of Corea, merchant vessels of all nationalities may transport goods of any country whatever in Corea; but, when a merchant desires to transport Corean articles bought at one open port in Corea to another open port, he shall deposit at the custom-house an amount of money equal to the export duty payable thereon, or lodge in the hands of the customs authorities a bond signed by himself and secured by another person, which bond has to be approved by the commissioner of customs, conditioned to pay an amount equal to the export duty.

On landing the said goods without the payment of any import duty at the port of destination within six months from the date of exportation, the importer shall receive a certificate from the customs officers of such port, stating the fact that such goods have been landed.

This certificate being produced at the customs of the port from whence the goods were exported, the amount deposited or the bond lodged as aforesaid shall be returned to the said merchant. If, however, the vessel in which the said goods were shipped be wrecked while engaged in transporting such goods, a report of the case, signed by the consul of the vessel's nationality, shall, within one year from the date of exportation, be handed to the customs, in place of the certificate above specified.

As soon, however, as Corean vessels are sufficiently numerous to carry on the coast trade between the ports of Corea, then the vessels of other nationalities will no longer have this right.

XXII.

The Corean Government engages to erect at all the open ports examination sheds and bonded warehouses. The rate of storage charges, as well as the regulations necessary for the management of the said warehouses, will hereafter be published.

XXIII.

Should it be desired to store imported goods in the bonded warehouses without paying the import duty, a special permit must be obtained from the commissioner of customs, in accordance with the warehouse regulations, and such goods may be freely re-exported. The duties paid on goods remaining stored in the bonded warehouses shall be refunded to the exporter on the re-exportation of such goods direct from the warehouse; but all goods which have once been taken delivery of by the importers shall be treated in accordance with Article XIX. Until such time as bonded warehouses are established by the Corean Government, all goods which have been once taken delivery of by the importer may be freely re-exported, and upon such re-exportation the duties paid shall be refunded, provided the goods are in the same condition as when imported, unless such re-exportation shall take place after one year from the date of importation, in which case they shall be treated in accordance with Article XIX.

XXIV.

Merchant vessels needing repairs may land their cargo for that purpose without the payment of duties. All goods so landed shall remain in the customs shed or warehouses (all charges for storage and other expenses being defrayed by the master of the ship); but if any portion of such cargo be sold, the specified duties shall be paid on the portion so disposed of.

Old timber and other materials belonging to any ship wrecked off the Corean coast shall be exempted from the payment of import duties.

XXV.

The master or agent of any merchant vessel wishing to clear shall make outward entry, and shall produce the export manifest at the custom-house before leaving the anchorage. The customs authorities will then return to the master the consul's receipt for the ship's papers deposited at the custom-house, and the vessel shall leave the port after obtaining her clearance papers.

XXVI.

Should it be desired to ship or unload cargo after a vessel has been entered outwards, according to the preceding article, the vessel must be again duly entered inwards; and when ready to clear, must again be entered outwards. When a ship which has been entered outwards is unable to leave the anchorage at such time as shall have been reported to the customs, the master or agent of the vessel shall report the circumstances at the custom-house and obtain the consent of the commissioner to remain in port.

XXVII.

Should a master apply for a clearance permit while a case involving a charge of violation of the customs regulations is pending, the customs authorities may refuse to grant such permit; but if the commissioner of customs shall be informed officially by the consular officer that sufficient security, either personal or by deposit, has been given to the said officer, then the commissioner of customs shall grant the clearance permit.

XXVIII.

Mail steamers may both enter and clear at the custom-house on the same day, or at the same time. In the import manifest of such steamers, it will be sufficient to mention only such articles as are to be landed or transshipped. When the master is unable to present the export manifest to the custom-house, the agent of the mail company may do so within three days.

XXIX.

Merchant vessels or fishing boats, compelled to put into one of the open ports of Corea, to obtain necessary supplies or to take refuge, need not be entered or cleared at the custom-house; but, if such vessel shall remain in port over twenty-four hours, the master shall make a report thereof, setting forth the causes and circumstances of such necessity to the custom-house. Should such vessel or boat subsequently engage in trade, the rules set forth in Article II shall be observed.

XXX.

The Corean Government engages for the future to keep the open ports in proper condition, and to construct light-houses, beacons, and buoys. In order to meet the necessary expenses of maintenance of such works, all merchant vessels entering at a Corean custom-house shall pay tonnage dues at the rate of 25 cents per ton register. (In Japanese vessels of Koku designation, 6 koku 5 tō 5 shó are equal to a ton.)

Fishing boats are exempt from tonnage dues. On the payment of tonnage dues by a vessel the customs authorities shall issue a special certificate, on exhibition of which, to and for which it was issued, said vessel shall be exempt from all further payment of tonnage dues in any open port of Corea for a period of four months.

If a merchant vessel arriving at a port departs therefrom within two days after arrival, without breaking bulk, such vessel shall not be required to pay tonnage dues. In case, however, such vessel be obliged to remain in port beyond the time above specified, by reason of stress of weather or any other similar cause, the master of such vessel shall report the fact to the customs authorities.

As soon, however, as merchant vessels of all nationalities resort to Corea in greater numbers, the question of keeping the ports in proper condition, and of constructing light-houses, beacons, and buoys, shall be reopened and the rate of tonnage dues be readjusted.

XXXI.

Men-of-war and other vessels belonging to or in use of a foreign Government, having no merchandise on board, shall not be required to enter or clear at the custom-house, nor to pay tonnage dues in any open port of Corea.

No customs officers shall be deputed to guard such vessels. Should condemned articles belonging to such vessels be landed and sold, the purchaser of such articles shall pay the proper duty to the customs authorities.

XXXII.

If a vessel shall smuggle, or attempt to smuggle, any goods at any of the non-opened harbors of Corea, all such goods, together with all other commodities on board such vessel, shall be forfeited to the Corean Government, and the master of such vessel shall pay a fine of $1,000; but this article shall not be held to apply to vessels entering any non-opened harbors on account of stress of weather, or for the purpose of procuring food, water, or fire-wood.

XXXIII.

Any foreign merchant vessel may be chartered by the Corean Government, or by any Corean subject, to convey goods, persons, &c., to any of the non-opened harbors in Corea; but in the latter case the charterer shall first obtain a license from the Corean Government.

XXXIV.

Any case involving a penalty, confiscation, or other punishment set forth in these regulations shall be decided by the consul of the country to which the vessel belongs on the complaint of the commissioner of customs.

Every penalty enforced or confiscation made under these regulations by such consular officer shall inure to the Corean Government.

Goods which are seized by the Corean authorities shall be put under seal in the presence of both the consular officers and said authorities, and shall be kept in the custom-house until the decision of the case shall have been given.

If such decision shall be in favor of the owners of the goods, they shall be immediately delivered to the owner, through the consular officer, but should the Corean authorities be dissatisfied with the decision, they may appeal to the authorities having cognizance of the consular decision, in which case the owners shall be bound to deposit the value of the goods at the consulate, which deposit shall remain until the final decision is made.

Should the seized goods be of a perishable or dangerous nature, they shall be handed over to the owner on his lodging the amount of their value at the consulate.

XXXV.

The importation of opium is strictly prohibited. All opium smuggled or attempted to be smuggled shall be forfeited, and in addition to this forfeiture a fine of $14 shall be paid for every catty so smuggled or attempted to be smuggled.

Opium imported for the use of the Corean Government and that of foreign residents in Corea for medical purposes under the guarantee of their consul is not included in this article.

XXXVI.

When the Corean Government shall have reason to apprehend a scarcity of food within the limits of the kingdom, by reason of inundation, drought, war, &c., they may, by decree, temporarily prohibit the exportation of all breadstuffs, but the Corean local authorities shall give one month's previous notice of such prohibition to the foreign residents of Corea through their consuls.

The import and export duty on cereals being at present fixed at 5 per cent. ad valorem, the Corean Government will, in case of famine, give due notice of an abolishment of the import duty.

XXXVII.

The sale of cannons, fire-arms, bullets, and shells, gunpowder, percussion caps, and all other munitions of war to Corean subjects is prohibited. Only the Corean Government or its authorized agents will make such purchases. Any such articles secretly sold shall be liable to confiscation.

XXXVIII.

For any violation of any of the provisions of these regulations, to which no penalty is attached herein, a fine not exceeding $30 may be imposed.

XXXIX.

All payments of duties, fees, and fines set forth in these regulations shall be made in the trade dollar of the United States, the Mexican dollar, or the Japanese silver yen. With regard to payments in the Corean copper coin, the customs authorities will, from time to time, fix their rate of exchange according to the market value.

The amount of fees and fines mentioned in Articles II, III, IV, VI, and XXXIII, shall be reduced by one-half for vessels under 500 tons, and by three-fourths for vessels under 50 tons.

COREAN TARIFF.

TARIFF ON IMPORTS.

Articles.	Per cent. ad valorem.
Aerated waters, such as lemonade, ginger beer, soda, &c., &c	8
Alum	5
Antimony	8
Bamboo, for Japanese houses	5
Bamboo, other kinds	8
Beer (ale, beer, porter)	10
Beeswax	8
Boats, small	8
Bones	8
Boots, shoes, &c	5
Brazil wood	8
Breadstuffs, flour, &c	5
Brick and tiles for Japanese houses	5
Brick and tiles, other	8
Buckles, hooks and eyes	10
Buttons	10
Camphor, crude	5
Camphor, baroos	10
Candles	8
Canvas and cotton duck	8
Carpets, all kinds	20
Carriages	10
Carts	8
Carvings	25
Cash-boxes	8
Cement and plaster Paris	5
Charcoal	8
Chemicals	5
Chests of drawers	5
China chin	8
Cider	8
Clocks and parts thereof	20
Cloth:	
Japanese shingping	8
Japanese cotton	8
Japanese thin lustring	8
Italian	8
Clothing, wearing apparel, socks, hats, &c., &c	8
Colors and paints:	
Lead and zinc pigments	8
Lead in oil	8
Paints, in oil	8
Cloves	10
Coal and coke	5
Cotton shirtings, gray, white, or figured	8
Cotton:	
Piece goods	8
Damasks	8
Drills	8
T-cloths	8
Turkey, red	8
Chintzes	8
Muslins and mixtures	8
Lunsleys, taffochelas	8
Ticking, bed	8
Raw and yarn	8
Crape	10
Cups and trays, Japanese	5
Curios	25
Cutlery and other hardware	8
Dye stuffs, Prussian blue, verdigris, vermilion	8
Dining boxes, Japanese	5
Doors, papered	5
Earthenware	8
Eating utensils, in porcelain and earthenware	8
Electroplated ware	20
Emery, sand	8
Envelopes, Japanese	8
Explosives, used in mining	10
Eye-glasses, &c	8
Fans	8
Feathers	8
Fireworks	30
Fish, preserved	8
Flax	8
Flaxseed	8
Foils (gold, silver, tin, copper, &c.)	10
Fowling-pieces, &c	30
Fruits, fresh	5
Furniture:	
Japanese	5
Other kinds	8
Furs	15
Games, chess, cards, billiard tables	30
Guns, sporting, and accouterments	30
Garro wood	20
Gasoline	8
Glass beads	30
Glassware	10
Glue, all kinds	5
Grindstones	5
Gold and silver ware	20
Goods not enumerated	8
Gross cloth	8
Gum benjamin	20
olibanum	20
Hair, not manufactured	8
ornaments	20
Hardware	8
Harness	10
Hemp	8
Hemp seed	8
Hides	8
Horns and hoofs	8
Incense sticks	20
Indigo, dry or liquid	8
Ink stones	8
Ink for seals	10
Ink, all other	8
Isinglass, vegetable	8
Lacquered ware, gold	20
Lamps, foreign	8
Lamp wick	8
Lanterns, paper	5
Leather	10
Linen	8
Linen mixtures	8
Linseed	8
Looking-glasses, with or without frames	10
Machinery	8

COREAN TARIFF.

Tariff on imports—Continued.

Articles.	Per cent. ad valorem.
Matches	5
Mattings, Japanese	5
Meats, preserved	8
Medicines, all	5
Metals:	
Copper	5
Copper pyrite	8
Copper wire	8
Lead	8
Tin	8
Iron	8
Iron wire	8
Steel	8
Solder	8
Quicksilver	8
" ore	8
Manufactured	8
Mirror stands	5
Miso, Japanese	5
Molasses	8
Mosquito nettings	8
Musical instruments	10
Musk	10
Nutgalls	8
Oil:	
Kerosene	5
Tea	8
Rapeseed	8
Sesamum	8
All other kinds	8
Oilcloth	8
Paintings	25
Pans, iron	8
Peanuts	8
Paper:	
For Japanese use	5
All other	8
Printing	8
Foreign wrapping	8
Colored	10
Figured	10
Pencils, all kinds	8
Perfumes	20
Photographs	25
Photograph apparatus	10
Pictures, framed or not	25
Pipes (tobacco)	15
Pitch and tar	8
Pomatum, Japanese	8
Pouches (tobacco)	15
Pouches, fur	15
Precious stones:	
Pearls	30
Corals	30
Jade and Jade ware	30
All other	30
Provisions:	
Japanese	5
All other	8
Playing-cards	30
Rape seed	8
Rattans	8
Spectacles	8
Safes, iron	8

Articles.	Per cent. ad valorem.
Safflower	8
Salt	8
Sandpaper	5
Sandalwood	20
Sapanwood	8
Satins	10
Satins, figured	10
Screens	5
Seals, materials of	10
Sealskin, imitation	8
Sesamum seed	8
Shingles	5
Ships:	
Steamers, sold per ton	50
Sail vessels do	25
Silk:	
Raw	8
Waste	8
Wildraw	8
Pongee	8
Stuff luntry	8
Lustrings	8
Ro, Japanese	8
Fabrics, Japanese, white, haberta	10
Damasks	10
Gauze	10
Lustrings, Japanese amber	10
Slates	8
Soap, all kinds	5
Soy, Japanese	5
Spikenard	20
Spirituous beverages:	
Brandy	30
Gin	30
Rum	30
Whisky	30
All other liquors	30
Cherry cordial	30
Liqueurs, all kinds	30
Starch, Japanese	8
Stationery, all kinds other than given	10
Sugar:	
White and brown	8
Refined	15
Candy	15
Sweetmeats	15
Sirup	8
Tallow, common	8
Tar	8
Tables, billiard	30
Tea, all kinds	8
Textile fabrics other than given of cotton, wool, and linen	8
Tobacco, all kinds	20
Tortoise shell manufactured	25
Tooth-powder	8
Toys	20
Trunks, Japanese	5
Tusks, ivory and other	8
Umbrellas:	
Paper	5
Foreign	10
Varnish	8
Vases, flower	25

COREAN TARIFF.

Tariff on imports—Continued.

ticles.	Per cent. ad valorem.
ton	8
	20
elli	8
	5
s and parts thereof	20
etable	8
th	8
v glass	8
mpagne	30
t	25
rry	25
mouth	25
l and white	10
nese and Japanese	8
Japanese houses	5
er kinds	8
l wood	10

Articles.	Per cent. ad valorem
Wood—Continued.	
Teak	10
Ebony	10
Other hard wood	10
Wool, sheep and other animals	8
Woolens:	
Alpaca	8
Blankets	8
Camlets	8
Flannels	8
Lastings	8
Lastings crape	8
Longells	8
Merino	8
Mouselaine de laine	8
Serges	8
Spanish stripes	8
Thibets	8
Damasks	8
Mixtures	8

ARTICLES DUTY FREE.

icultural implements; articles for ship's use; articles for packing ses, such as rags, mats, ropes, &c.; bullion, gold and silver; maps, &c.; barometers; coins; hydrometers; models of inven- magnetic compasses; newspapers; samples, reasonable quan- ign-boards; scientific instruments of all kinds and their appli- surgical instruments; show-cards; scales and balances; thermom- traveler's luggage; type, old and new; fire-engines.

PROHIBITED ARTICLES.

n, except for medical uses; adulterated drugs and medicines; false coins; in- and obscene books and pictures, or engravings; munitions and implements of ms, as samples and for self-defense, may be imported after obtaining, through ul, a permit from the Corean authorities, but are not allowed to be sold; red

TARIFF ON EXPORTS.

ticles exported, 5 per cent. ad valorem.

CARRIAGES IN NORTHERN MEXICO.

REPORT BY CONSUL-GENERAL SUTTON, OF MATAMOROS.

ve the honor to submit herewith a short report on carriages in), principally for Northern Mexico.

PLEASURE CARRIAGES.

iages for pleasure, European or American in styles, are imported hese countries. They are usually of extra strength, and should

be of such material and make as to stand droughts, sun-heat, and stony roads.

In Northern Mexico I know of nothing in use lighter than a pretty solidly-made single-seat top-buggy. The ruling prices are very high and variable. If the factory price be $100, currency, it would be about fair to put down the import cost, duties unpaid, at $130 to $140, Mexican coin. To this add duties of fully $100, Mexican coin, on above valuation, giving local cost at $230 to $240. Selling price all the way from 25 per cent. to 50 per cent. increase on cost.

STAGE COACHES, DILIGENCES, ETC.

Traveling carriages for stage lines (diligences), built after the old Concord coach pattern, are immense, carry fourteen passengers, have two drivers and 8 or 10 mules. Price, $600, more or less, in Mexican coin.

2. Traveling carriages (ambulances) for private travelers are about the size of a three-seat open spring wagon in the United States; are covered, have brake and cross springs, are very strong, and are fitted up for long journeys; are drawn by two to five mules. These are the most common traveling carriages. Prices may be computed as under pleasure carriages. Some are finely fitted up and cost $1,000 or more.

3. American top-buggies, generally one seat, are in very limited use.

4. Heavy wagons for trains, similar to those in use in Texas and the West. "Chihuahua" wagons are still heavier than the above. Prices, $200 to $300, Mexican coin.

Carts, two wheels, covered, very heavy, some with spokes, some with solid wheels; $100 to $10, Mexican coin. Carts, open, two wheels, for drays, are in use.

5. Pleasure carriages are generally, if not always, imported, and on this frontier from the United States. Diligences are generally made in Mexico. The best ambulances are imported from the United States. Some are made in Mexico. Top-buggies come from the United States. Freighting wagons generally come from the United States; some, however, are made in Mexico. Same as to "Chihuahua" wagons. The carts are almost entirely made in the country.

CARTS AND WAGONS FOR MEXICO.

Is there likely to be a large demand for American carts and wagons in Mexico? The answer to this depends upon the adoption or rejection of the proposed treaty with Mexico, now under consideration by the United States Senate.

Generally speaking, American styles are popular, but they should be adapted to the needs of the country. The climate varies from very hot (on the plateaus) to extreme cold; from very dry to very wet. The sun's heat is very great, and carriages must be built to stand it and the extremes above noted. The roads are usually stony, sometimes sandy, generally fair in dry seasons and bad in wet weather. The width of track is generally the same as for vehicles of a similar class in Texas and the West.

Harness.—The imported harness is of American fashion. That made in Mexico differs slightly. The Mexican saddlery is purely Mexican. It would be best described by a photograph, which I might have taken should it be desired.

DUTIES.

The duties are as follows:

Diligences, all classes and dimensions, each, Mexican coin, $150.

Carriages of two seats and two wheels, with or without cover, each, $66; open, of two seats and more than two wheels, with or without cover, each, $88.

Carriages and coupés, closed, four wheels and two seats, each, $132; open, and more than two seats, each, $176.

Carriages not specified, such as landaus, berlins, phaetons, and other coaches of four wheels and more than two seats, each, $396.

Small, of all classes, for children, upon appraised value, 55 per cent.

Two wheels, without covering or lining of any sort, and without being varnished or polished in painting, each, $88. Four wheels, and like above, each, $176.

Carts for oxen and mules, and cars: Two wheels, each, $33; four wheels, each, $66; small hand, two wheels, $3.

Wheels and spokes for carriages, upon appraised value, 55 per cent.; wheels separate, for carts of all dimensions, per pair, $13.50; for coaches and other carriages, per pair $20.

Anything not specified in tariff list, upon appraised value, 55 per cent. Add to above duties 4 per cent., also add 50 cents for each 100 kilograms, gross weight, and total gives the full duties.

SPECIAL REGULATIONS.

Matamoros, Nuevo Laredo, and the custom house towns of Camargo, Mier, and Guerrero, lying between these, are in the Zona Libre (Free Belt). This belt extends from the mouth of the Rio Grande up river to a little above Nuevo Laredo, a distance of about 250 miles. Its width is variable, from 10 to 26 miles wide, and never extending back from the river farther than the State limits of Tamaulipas. Population, about 50,000.

Into this Zona all goods may be imported, held, sold, consumed, or transported, under proper scrutiny, from one point to another inside the line, free of all duties except 1.37 per cent. of the regular Mexican import duties, and half of 1 cent per pound on gross weight.

The first is paid over to the municipality, the second is to pay revision of goods. Free goods are exempt from the weight duty.

When goods once imported are sent to the interior of the country, the full duties are computed, and the amount previously paid, goods being properly identified, is deducted therefrom.

COMMENTS.

Let us consider questions 3 and 4. The first asks if there is an opportunity for the introduction of American carts and wagons. The second asks if the industry is of sufficient importance to encourage the introduction of American materials.

Mexico imported from the United States of carriages, &c., as above, in the year ending June 30, 1882, invoice values in United States coin $173,015, on which the duties were about $175,000 Mexican coin.

If the reciprocity treaty between the United States and Mexico is confirmed, this trade should be materially increased. There is and will be a steady and increasing demand for such goods in Mexico. Woods having the requisite strength, elasticity, and toughness are not found in Mexico, at least in such conditions as to make home competition possible, if this treaty is confirmed.

By a late treaty with Germany that nation will enjoy the same privilege as the United States, but of course there is no fear of German competition in this line.

If the treaty should become a law, I would suggest the establishment

of agents in every principal city in Mexico. If the treaty even fail, the introduction of American materials should be vigorously pushed by agents in the principal cities just the same.

Agents should be empowered to sell, and to sell at prices which will give us the full trade, even if it be at a loss for a time. It may easily cost something to get control of a trade like this, but manufacturers should look to the future for sure profits and a good trade.

WARNER P. SUTTON,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Matamoros, February 28, 1884.

NOTES.

berian gold.—Under date of January 8, 1884, Consul Van Riper re- s that the production of the Siberian gold mines for the year 1883 as follows:

	Poods.	Lbs.	Solotnik.
tory of Olskinsinsk	667	22	29
tory of Ansowa	253	39	43
her Territories of East Siberia	217	18	85
tories of West Siberia	12	28	17
e Oural	189	30	85
Total	1,341	19	67

regating 48,455 English pounds, of a value of 2,000,000 roubles, bout $1,000,000. The gold mines of Russia (Siberia) are attracting ttention of those interested in this subject. That there is a wide for operation does not admit of a doubt. It appears to be a sec- California, but needs American push and energy to develop its urces.

rosene oil in Aden.—Consul Williams, of Aden, supplies the follow- nformation:

s return of kerosene oil at this port for the fiscal year 1883 was as follows:

rts from United States	377,340 gallons.
rts from Bombay	2,710 gallons.
rts to all ports	157,384 gallons.

w ports in Liberia.—Under date of February 4, 1884, Consul-General th informs the Department that at the session of the legislature ended, on the recommendation of President Johnson, that body au- ized the opening of two more ports, one at Niffou, in the county of u, which by proclamation has just been declared open, and one to pened in the county of Montsenado, not yet named. The legisla- , "for the encouragement of trade and commerce," authorized the blishment of a settlement at the southeastern limit of the Republic, Pedro.

nerican pork in Greece.—Minister Schuyler, under date of March 10, , transmits the following:

MINISTRY OF FOREIGN AFFAIRS,
Athens, February 23, 1884.

s ministry of foreign affairs has the honor to inform the legation of the United s of America that, on the advice of the medical council of Athens, the depart- of the interior has authorized the importation into Greece of pork of American n.

oduction and consumption of silk in Lyons in 1883.—Under date of uary 14, 1884, Consul Peixotto writes:

areful review of the statistics furnished by the different Chambers of Commerce ther corporations more distinctively connected with silk commerce shows the ring interesting features respecting the production and consumption of silk dur- he year 1883:

st. *The production of silk* in 1883 has decreased.

Second. *The actual stocks* held at all the principal points in Europe are lower than for fifteen years past.

Third. *The consumption of silk* has largely increased, except for one or two years during the past fifteen.

Fourth. *The consumption of silk*, at Lyons in particular, has increased.

The foregoing statement will doubtless excite surprise, as the general opinion is to the contrary. The facts, however, are abundant to prove the truth of the assertion.

Cattle disease in Switzerland.—Minister Cramer, under date of March 12, 1884, reports that the foot-and-mouth disease among the cattle in Switzerland had considerably increased during the past month. During the first half of that month there were 135 stables or farms infected with that disease, while during the latter half the number was increased to 165. This number is divided among the several cantons as follows: St. Galle, 37; Thurgau, 28; Appenzell Exterieur, 21; Zurich, 17; Grisons, 17; Glarus, 15; Basle, 10; Berne, 5; Aargau, 5; Schaffhausen, 3; Soleure, 2; Lucerne, Fribourg, Vaud, Neuchatel, and Basle (city), each 1.

Cases of inflammation of the spleen have also occurred, while lung disease among the cattle has entirely disappeared. According to the latest information from Alsace-Lorraine, the foot-and-mouth disease prevailed there during the month of January in 12 districts and 35 towns and villages, or on 117 farms. In Baden it prevailed in 210 stables or farms, while the weekly bulletin of Italy (February 4 and 10) gives the number of diseased cattle as 70. On the 25th of February the cattle disease in Austria-Hungary had disappeared, while in Russia it is still prevalent.

These facts are ascertained because these countries, with the exception of Russia, are bordering on Switzerland. The information and figures given above are official.

Exports from Lyons to the United States.—The declared exports from the consular district of Lyons to the United States for the month of February amounted to $1,004,394.39. For the same month in 1883 the exports were $1,109,082, a decrease for this February of $104,688.

For the first two months of this year the exports were $2,127,259 against $2,517,166 for the first two months of 1883, a decrease for 1884 of $389,907. This diminution relates, as in the past months, to the falling off in the exports of silk manufacturers, the decreased export in these goods alone for the past two months compared with the same period of last year being over $296,000.

The raw-silk market.—Under date of March 3, 1884, Consul Peixotto, of Lyons, writes as follows concerning the raw-silk market:

The raw-silk market continues calm. The export of grège silk to the United States has also fallen off for the first two months of the year to the amount of $84,043.

The disease of *pebrine* in the silk-worms of China is now definitely known, and a continual decrease in the export of China raw silks may be calculated on for certainty.

Stocks of grèges on the principal markets of Lyons, Milan, and London are comparatively limited. Should the forthcoming silk crop in Europe prove feeble, or should there be an increased demand for silk fabrics, the price of the raw material, never so low as at present, will rise very considerably.

Silk commerce of France.—Consul Peixotto of Lyons, submits the following review of the silk commerce of France during the year 1883:

According to the annual report of the French custom-house the total value of the silk commerce of France (imports and exports) for the year ending December 31, 1883, amounted to 836,206,938 francs, or, in United States currency, $161,387,939.

Divided as follows:

IMPORTS.

	Francs.
Silks and cocoons	341,008,262
Manufactures of silk	43,375,810
Total	384,381,072
	Or $74,186,126

EXPORTS.

	Francs.
Silk and cocoons	165,591,152
Manufactures of silk	286,231,714
Total	451,822,866
	Or $ 87,201,813

These figures are not considered to be strictly reliable representing as a general rule *at least* 20 per cent. less than the true value.

I think it safe to say that the total value of the French silk commerce for 1883, amounted to $200,000,000, dividing the true value of the imports and exports as follows:

Imports	$85,000,000
Exports	115,000,000
Total	200,000,000

I believe I can fully sustain these figures to any one critical upon the subject, my calculations being based upon undervaluations in quantities, weight, and values, and including all the silk exports from France to all countries of the world, and leaving out inaccuracies on the part of officials.

COMPARATIVE PRICES OF GRÈGE SILK.

The comparative prices of the leading grades of grège silk for the week ending January 22, during the past three years, have been as follows:

Description.	Francs per kilogram.		
	1882.	1883.	1884.
France, 2 order, $\frac{13}{15}$	68–70	61–63	57
Italy, 2 order, $\frac{13}{15}$	58–60	55–57	54
China taatlee, 4	49–50	44	46
Japan grappes, No. 2	52–54	45–46	45

Exhibition.—An exhibition of the decorative arts, including the rarest products of the silk manufactures of Lyons, was opened yesterday at the Palace St. Pierre, in this city. I shall have occasion to speak of this remarkable collection and display in a future dispatch.

Review of the silk trade.—In a dispatch dated March 18, 1884, Consul Peixotto, of Lyons, submits the following review of the silk trade in Europe and in the United States:

There was a diminution in the production of silk for the past year, the total product being 8,364,000 kilograms, or about 18,900,000 pounds, against 9,095,000 kilograms, or a little over 20,463,000 pounds, the annual average since 1872. The consumption of silk throughout Europe has on the contrary very considerably increased.

At Lyons the consumption increased 16 per cent. during 1883 over the general average for the past fifteen years.

The actual stocks of silk held at all the principal points are comparatively light, being in point of fact less than at any time since 1868–'9.

In spite of the foregoing facts the market for raw silks continues without perceptible change, the exceptionally low prices of the past year still prevailing.

Curious to note in this connection is the increasing importation and remarkable consumption of silk in the United States. There was received during the year 1883, at the ports of New York and San Francisco, the following quantities of silk:

	Bales.
From Europe:	
Fine silks	3,340
Asiatic silk	26[illegible]
From Asia:	
Japan	11,450
Canton	5,43[illegible]
Shanghai	4,540
Total	25,03[illegible]

Being an increase over 1882 of 26 per cent., and three or four times this percentage over 1875.

Raw silk began to arrive at San Francisco in 1867, on the inauguration of the China line of the Pacific Mail Steamship Co., and regular monthly shipments were made on the completion of the Pacific railways in 1869.

The Lyons piece goods market continues dull, the exports to the United States as well as to other countries, constantly falling behind the same period for last year.

Emigration from Christiania.—Consul Gade informs the Department, under date of January 23, 1884, that the emigration to the United States from Christiania during the past year did not reach the number emigrating in 1882.

According to the figures furnished to this consulate by the emigration bureau of the police chamber, it results that 14,664 persons left this port in 1883 for the United States, against 18,723 in the previous year.

Of the former number, all of whom left by steamer, 6,317 were men, 4,684 women, 1,918 were boys, and 1,745 girls.

Of the aggregate number 1,506 belonged to this city, 1,627 were Swedes, 341 were Americans (by which are probably meant Norwegians earlier emigrated, who had now been on a visit to their native country), and 88 persons from other countries.

The emigrants are reported to have carried with them in money 113,580 crowns, and their passage-money to America amounted to 959,224.35 crowns.

Prepaid tickets had been sent from America for 8,251 emigrants.

Malt statistics of Bavaria.—Under date of February 20, 1884, Consul Harper submits the following:

A statement of malt consumption in the year 1882, showing that the smaller brewers pay the largest amount of malt tax. The total number of brewers, 72,000, consume 115,458,876 imperial gallons of malt. A review of the statement shows the following statistics:

Imperial gallons.	Number of brewers.	Total consumption, imperial gallons.
1 to 2,202	7,100	4,240,308
1 to 4,405	1,458	4,597,687
1 to 6,607	730	3,950,903
1 to 8,810	468	3,583,590
1 to 11,013	333	3,323,656
1 to 13,216	224	2,710,925
1 to 15,418	176	2,513,040
1 to 22,026	393	7,273,326
1 to 33,039	381	10,283,040
1 to 44,052	236	9,081,013
1 to 66,079	223	9,731,454
1 to 88,105	102	7,802,247
1 to 110,132	51	4,981,696
1 to 132,160	22	2,067,208
1 to 154,185	20	2,810,045
1 to 220,264	42	7,627,951
1 to 440,528	20	7,862,070
1 to 1,101,321	16	10,427,863
1 to 2,202,643	3	4,664,934
over 2,202,643	2	5,325,925
	12,000	115,458,876

ting the above into larger groups we reach the following result:

Imperial gallons.	Number of brewers.	Total consumption, imperial gallons.
6,607	9,288	12,788,896
11,013	10,089	19,696,145
15,418	10,489	24,920,110
22,026	10,882	32,193,436
33,039	11,263	42,476,475
44,052	11,449	51,557,488
66,079	11,722	63,491,585
110,132	11,875	76,275,528
132,160	11,897	78,942,731
220,264	11,959	89,380,726

nce is distributed among 41 brewers, with a consumption of 26,078,150 imons.

vith Samoa.—Under date of December 31, 1883, Consul Canipia, furnishes the following information concerning the trade for the quarter ending December 31, 1883:

he quarter ending to-day nine American vessels, with a tonnage of 1,121.08 argoes valued at $64,702.94, arrived at the port of Apia. This greatly exalue of imports during any single quarter in the last two years, and is a ising sign of the increase of American trade in the South Seas. These were divided among three American firms at Apia. A considerable porgoods will be re exported to various other island groups.

he same quarter last year only one vessel, of 218 tons burden, arrived with lued at $20,312.37, so that the increase for this quarter is $44,390.57.

owing table shows the imports during this quarter in American vessels:

From.	Tons	Value.
o	878.53	$58,152 94
	131.40	6,550 00
	111.15	
	1,121.08	64,702 94

n Francisco the imports consisted chiefly of lumber and provisions, and ice and sugar.

r-island trade is carried on by a number of small vessels owned by Americants at Apia. The imports in these vessels consisted entirely in copra, ere transshipped for San Francisco.

this quarter another American house has been established at this place, total of three, who all draw their merchandise directly from San Francisco. orts to the United States in American ships, consisting in copra, have also creased this quarter. I am not able to say exactly what the amount is, te it at 300 tons, valued here at $12,000. This is not all the produce of nearly all vessels leaving this port for San Francisco touch at various the Ellice, Gilbert, and Kingsmill groups.

disease in Nova Scotia.—Consul Johnson, of Pictou, Nova Scotia, hat a peculiar disease originating near that place about thirty o, and slowly spreading to the eastward, gave rise to grave isions as to the future of stock-raising. The disease is not genpid in its course, but it appeared to be incurable. An American ioner was sent two or three years since to examine and report It was not contagious in the ordinary sense of the word. In Dominion Government appropriated $20,000 to stamp it out by ring infected animals, quarantining suspected ones, and disintables. The result, so far, appears to have had a good effect. mers charged the disorder to the prevalence of a weed of the mpositæ, *Senecio jacobea*, which is found in no other part of the n continent. This *Senecio* is common in Scotland. But while

it is a most undesirable weed in every way, it has been proven by the most direct experiments to have no tendency to produce the Pictou cattle disorder.

Robson fire-bricks.—Under date of February 14, Consul Locke, of Newcastle-upon-Tyne, writes, referring to an anomaly in the price of Robson fire-bricks, as follows:

In Glasgow manufacturers make a much better class of brick than is made on the Tyne, and the manufactories, being situated for the most part far up the river, renders transport to the sea-coast both difficult and expensive, consequently the price of bricks there is much greater than on the northeast coast. And again, upon strict inquiry, I learn that there are evidently two "Robson" brands of fire-brick, each local to Glasgow and Newcastle-upon-Tyne respectively. The price for "Robson" fire-bricks here still remains at 30*s.* per thousand. It is one oft he cheapest brands manufactured in this consular district, hence the great disparity between the prices of it and the Glasgow brand, which is evidently one of superior manufacture.

Netherlands Trading Museum.—Under date of January 19, 1884, Consul Eckstein informs the Department that—

A trading museum has been established in Amsterdam, the aim and object of which are described to be the following, viz:

1st. To establish and hold a permanent exhibition of home and foreign products and manufactures.

2d. To collect and furnish all possible information relating to commerce and industry.

3d. To bring into connection and further intercourse producers and merchants.

4th. To receive and deliver orders for exhibited articles, and to give information concerning the solidity and responsibility of producers and consumers; and, furthermore, to accomplish whatever might tend to foster and develop commerce and industry.

Tea adulteration in Japan.—Under date of March 5, 1884, Consul-General Van Buren transmits the following extract from the Japan Mail:

NOTIFICATION NO. 4 OF THE IMPERIAL GOVERNMENT.

To cities and prefectures:

Whereas there is a quantity of colored, impure, and otherwise adulterated tea in the market, not only interfering with legitimate trade, but injurious to the public health, those engaged in the tea trade are ordered to conform with the following by-laws, and to report the establishment of tea guilds to the agricultural and commercial department.

BY-LAWS CONCERNING TEA GUILDS.

ARTICLE I. Those engaged in the tea trade, be they producers or sellers, must establish tea guilds in each of the urban or rural wards in which they reside.

N. B.—The production of tea for individual consumption does not come under these by-laws.

ART. II. The guilds shall bear the name of the prefecture, city, urban, or rural ward in which they are established.

ART. III. The guilds shall frame rules with a view to achieving the following objects: (1) That tea adulterated with bad and impure stuff shall not be manufactured; (2) that tea-leaves shall be properly fired and packed; (3) that the names of the producers and sellers shall be marked on every package.

ART. IV. Every guild shall appoint a committee to regulate and manage its own affairs.

ART. V. The members of a guild must be furnished with certificates proving their membership. These certificates must bear the stamp of the local authorities.

ART. VI. A committee shall examine into and report upon the condition of all the guilds.

ART. VII. A head guild for the supervision and control of all other guilds shall be established in each prefecture.

ART. VIII. The officers of the head guild shall be elected by vote from among the members of the subordinate guilds.

ART. IX. The expenses consequent upon the maintenance of the head and sub-guilds shall be mutually determined by all the guilds.

t. Each guild shall be at liberty to frame such rules as may be considered it for the attainment of the above objects.

YAMAGATA ARITOMO,
Home Minister.
SAIGO YORIMICHI,
Minister for Agriculture and Commerce.

H 3, 1884.

gn trade of Japan.—Minister Bingham reports that the foreign f Japan for December, 1883, was as follows:

of commodities exported within the month was 3,416,753 yen; value of com- imported within the month was 1,966,501 yen; the value of the exports being s of the value of the imports for the month 1,450,252 yen; import duties for th were 108,959 yen.

of specie and bullion exported within the month was 239,256.41 yen; the ereof imported within the month amounted to 365,032 yen.

graphs in Asia.—Minister Young transmits to the Department, date of January 29, 1884, the following:

astern Extension Australasia and China Telegraph Company's office in this eking) has received notice that the operations of laying the new cables have ced. The cables have come from England in the Telegraph Construction and ance Company's steamer Kangaroo, which will be assisted by the Eastern on Company's steamers Sherard, Osborn, and Agnes. The new cable will first to connect Saigon with Hanoi and Haiphong, and then the line will be northwards to Hong-Kong; possibly via Macao, but this last point has not settled. About 200 miles of the line have been laid already, and completion the winds and waves are not unfavorable, soon be made. The new system olicate the Eastern Extension Australasia and China Telegraph Company's hina. The new line receives a subsidy from the French Government, be- ntil Hanoi and Haiphong become, as they assuredly will, important rice , the traffic will not suffice to cover the expenses of the costly new lines. line, like all others of the Eastern Extension Australasia and China Tele- ompany, is in sole charge of the company's servants, free from all interference ort, and in all respects neutral and independent.

rtation from Bahia, Ecuador.—Consular Agent Goddard transmits lowing:

Exportation from Bahia, Ecuador, during the year 1883.

Country.	Articles.	Quantity.	Value.
		Pounds.	
ates	Rubber	367,460	$183,730 00
	do	235	117 50
		367,695	183,847 50
ates	Cocoa	220,458	33,068 70
	do	673,911	101,086 65
	do	561,524	84,228 60
	do	3,060	459 00
	do	8,430	1,264 50
	do	3,000	450 00
merica	do	41,194	6,179 10
	do	13,752	2,062 80
		1,525,329	228,799 35
ates	Ivory-nuts	6,600	360 00
	do	153,615	7,680 75
	do	954,414	47,720 70
		1,114,629	55,761 45
ates	Hides	78,737	13,805 15
	Deer hides	341	102 30
	Tobacco	1,200	300 00
	Coffee	5,775	577 50
	Starch	1,259	100 72
	Coffee	2,400	230 00
	Balsam bark	100	35 00
	Tobacco	1,980	495 00
	Coffee	2,400	240 00
		94,192	15,885 67

RECAPITULATION.

United States	$231,066 15
England	109,654 90
Germany	132,826 80
Spain	450 00
France	2,062 80
Central America	6,179 10
Chili	230 00
Colombia	1,365 22
Mexico	450 00
	484,293 97

Navigation of Maracaibo.—Under date of February 10, 1884, Consul Plumacher writes:

As long as the bar at the entrance of the lake exists, no ships of greater draught than 11 feet should try to pass the bar. During the last year the outer bar at Bajo Seco has improved much; there is now from 13 to 14 feet of water. With comparative small expense the other outlets from the lake could be closed up, which would greatly increase the power of cleaning the channel. The greatest obstacle now is the inner bar, but a channel could be easily opened by dragging with a steam drag.

We had, during the last year, an increase of vessels; 207 in 1882, and 235 in 1883. Of the sailing vessels, the German and Danish flags were the best represented. The British steamers of the Atlas Line, under the English and Spanish flags have entirely withdrawn. The steamer Maracaibo, under the American flag, running between Curacao and Maracaibo, belonging to Messrs. Boulton, Bliss & Dallett, is now carrying most of the freight for the United States to Curacao, to be transferred to the large and commodious American steamers of the Red D Line, of Messrs. Boulton, Bliss & Dallett, New York.

Report of vessels arrived at the port of Maracaibo, during the year 1883.

Flag.	Men-of-War.	Steamers.	Barks.	Brigs.	Brigantines.	Schooners.	Total.
American	.....	25	.....	4	1	2	32
English	.....	11	1	1	7	.....	20
French	.....	.....	3	2	7	.....	12
German	.....	.....	1	.....	14	.....	15
Italian	.....	.....	1	.....	6	.....	7
Danish	.....	.....	.....	1	15	.....	16
Norwegian	.....	.....	.....	.....	2	.....	2
Swedish	.....	.....	.....	1	.....	.....	1
Dutch	.....	.....	.....	.....	3	11	14
Spanish	.....	1	.....	.....	.....	.....	1
Russian	.....	.....	.....	.....	1	1	2
Venezuelan	.....	.....	.....	.....	2	111	113
Total	.....	37	6	9	58	125	235

There have been more than 300 vessels, not mentioned in this report, as steamers and small sailing-vessels and occupied in the lake and river navigation.

Norwegian shipping.—Consul Gade, under date of February 27, 1884, transmits the following statistics concerning Norwegian shipping:

On January 1, 1884, there were building in Norway 48 sailing-vessels, of an aggregate of 19,920 tons; 32 steamers of iron and wood, 10,530 tons; total, 80 vessels of 30,450 tons.

On January 1, 1883, there were building 56 sailing-vessels of an aggregate of 21,050 tons; 17 steamers of 4,250 tons; total, 73 vessels of 25,300 tons.

It will be seen that the increased tonnage at the beginning of the present year is owing to the building of steamers, the largest of which measures about 1,250 tons; and that the building of sailing-vessels has at the same time fallen off by 1,000 tons from that of the previous year.

registers of the Norwegian Veritas show the following increase and decrease mercantile marine of Norway in 1883:

ass.	Addition.		Tons.		Gross addition tons.		Decrease.					
	Bought in foreign countries.		Built in Norway, 1883.				Lost vessels.		Sold to foreign countries.		Total decrease.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
vessels..	100	62,742	40	12,298	140	75,035	178	57,187	6	2,026	184	59,213
rs:												
od	3	1,257	3	486	6	1,743	4	1,170	.....	.....	4	1,170
el	5	1,936	.....	.....	5	1,936	.....	.....	.....	.....	.....	.....
n	14	5,405	17	4,728	31	10,133	6	3,430	.....	.....	6	3,430
steamers	22	8,598	20	5,214	42	13,812	10	4,600	.....	.....	10	4,600
d steam ls.....	122	71,340	60	17,507	182	88,847	188	61,787	6	2,026	194	63,813

erican arms for Siam.—Minister Haldeman, under date of Decem-, 1883, informs the Department that the King of Siam has ordered urchase of ten thousand stand of arms for the Siamese army. Siamese envoy has been instructed to engage American Army offi-s military instructors for the Siamese army.

erican arms for Corea.—Minister Foote, under date of December 18, reports that an American commercial house in Yokohama has been issioned to purchase three thousand stand of American breech-ng firearms, with ammunition, for the use of the Corean troops.

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FROM THE

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ON THE

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OF THEIR

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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 41.—MAY, 1884.

TRADE OF BUENOS AYRES WITH THE UNITED STATES.

REPORT BY CONSUL BAKER.

The trade of the United States with the port of Buenos Ayres for the year 1883 shows a decrease of nearly $1,000,000, compared with the figures of the previous year, the imports from the United States being $338,377 less, and the exports thereto being $570,864 less. While the trade has thus decreased in bulk, it has been somewhat unsatisfactory in other respects. It has not been generally profitable. This has been especially the case in respect to the export trade to the United States.

EXPORTS FROM BUENOS AYRES TO THE UNITED STATES.

The following table, compiled from the invoice book of this consulate, shows the amount and declared value of each article *actually* exported from Buenos Ayres* to the United States for the year ending December 31, 1883:

Articles.	Quantity.	Declared value.
Dry ox and cow hides ..... number..	319,442	$1,324,193 47
Salted ox and cow hides ..... do ...	11,200	69,666 14
Horse hair ..... bales..	919	386,666 80
Goat skins ..... do ...	259	120,180 75
Nutria skins ..... do ...	835	280,009 12
Feathers ..... cases..	147	91,551 02
Carpincho skins ..... bales..	23	22,737 49
Do ..... number..	23,366	
Wool ..... bales..	238	102,291 18
Deer and stag skins ..... do ...	2	7,542 10
Do ..... number..	3,466	
Hide cuttings ..... bales..	280	10,028 02
Old iron ..... tons..	1,441	26,080 29
Sheep skins ..... bales..	7	222 79
Chinchilla skins ..... do..	2	490 83
Rags and paper stock ..... bags..	16	292 77
Horns ..... number..	6,000	500 00
Bones and bone ash ..... tons..	1,149	40,570 71
Dried blood ..... bags..	2,316	7,535 61
Sundries ..... do....	2	215 72
Total*	.....	2,450,774 81

* The difference in the value of the exports from Buenos Ayres to the United States as declared at the consulate and as reported by the custom-house authorities is explained by the facts that all articles of export have a fixed official value in the custom-house, while at the consulate the actual price paid is given in the invoice.

* A large amount of the exports declared for shipment at the consulate of Buenos Ayres were actually shipped from Rosario. Such exports are not included in this table.

There is a falling off of 215,000 in the number of hides shipped in 1883, compared with the year previous. The market for that and other articles was greatly deranged by the heavy failures of parties in the United States and Canada engaged in the leather trade; and the losses in consequence among prominent houses trading at this port were very serious.

In regard to wool, it has been found that, owing to our high tariff on foreign wools, it will not pay to ship to the United States any of the fine varieties, and during the last year only the coarse carpet wools produced in the province of Cordova were forwarded to the Massachusetts mills.

In horse-hair, compared with the previous year, there is a falling off of more than three hundred bales and an increase of over five hundred bales in nutria skins. In bones and bone ash, there is a decrease of three thousand tons; and in dried blood, of nearly twelve thousand bags. In other items, there is nothing of special importance to note. It may be generally said of the export trade to the United States that during the last year it was not profitable.

IMPORTS FROM THE UNITED STATES.

In regard to importations from the United States, while there has been no very great decrease in the amount, compared with the year 1882, the trade has been so cut up, by increased competition of new houses engaging in the same business, that the year cannot be said to have been even fairly satisfactory. Owing to the manner in which the tables of imports are made up in the national statistical office, it is not possible for me at this time to make exact comparisons of the leading articles received here from the United States during the years 1882 and 1883, respectively. It may, however, be stated generally, that the shipments to Buenos Ayres of American oils, alcohol, rice, lard, lumber, tobacco, starch, furniture, &c., for 1883 are fully equal to those of the previous year; while that of agricultural implements and machinery is greatly in excess of any former year.

In cotton goods, while in certain lines the trade with the United States continues uniform, the great bulk of such manufactures is still supplied from Great Britain, the bonded warehouses of Buenos Ayres being filled with stocks sufficient to meet the demand for a year or so to come.

The trade in sewing machines, which for many years has been monopolized by the United States, now finds a strong competition in Belgium, Germany, and France, most dealers in this market now keeping all makes and varieties in stock.

There has been, during the last year, considerable call for American pianos, especially of the higher-priced instruments. Of the upright, France and Germany have heretofore generally supplied this market; though several American instruments of this form, recently imported to this market, have attracted attention.

American plated ware still continues to maintain its supremacy in this market, owing to its beauty of design and superior finish.

American sugar, which for several years has scarcely been seen in the river Plate, has once more made its appearance. It is to be hoped that shippers will take the precaution of seeing that their cargoes are carried in water-tight ships—a prerequisite to a dry and satisfactory condition of the sugar which they have heretofore paid no attention to.

RAILWAY MACHINERY.

In my last report of the trade of the port of Buenos Ayres, I spoke of the orders which had gone forward from the National Government

for the purchase of American locomotives. I now have to state that those which have been received here have proved so satisfactory, and are so greatly superior to such as have been furnished by Belgium and Great Britain, that large additional orders have been sent to the United States, mostly directly through Señor Dominguez, the Argentine minister at Washington.

READY-MADE HOUSES.

Another line of American manufactures which is attracting attention here is that of ready-made wooden houses. Several shipments on a large scale have already been received here, and are now in course of erection in the embryo city of "La Plata," the new capital of the province of Buenos Ayres, situated 25 miles south of this port, on the Bay of Ensenada. The demand for habitations at that place was so great that the provincial government could not wait the slow processes of brick and mortar, and hence these orders. I understand that upwards of 1,500 are now being put together at that place; and the price is so reasonable that a number of *estancieros*, who are improving remote cattle farms, have also determined to try the virtues of these houses. Should they meet the expectations of the Argentine people, a large trade in them is likely to result. The only fear is that, owing to the heavy southwest winds (*pamperos*) which prevail here, they may be found to be too light.

WINDMILLS.

During the last year there has been quite a business done in American windmills. They are admirably suited for the production of power on the pampas, and, when once their advantages for pumping water, grinding corn, &c., are fully understood, I have no doubt they will be seen dotting the country in all directions. During portions of the year, owing to drought, it is becoming absolutely necessary to dig wells for the supply of water to the flocks and herds; and these windmills are the cheapest as well as most serviceable contrivances the *estancieros* can procure for such purposes.

OTHER ARTICLES.

The opportunities for the sale of mining machinery, sugar mills, sugar refineries, street railway carriages, fencing wire, country wagons, lamps, clocks, cutlery, pumps, printing paper, &c., still continue; though in regard to some of these lines of manufactures it is necessary to make a personal inspection of the field for the purpose of securing orders. I have so often and so lately discussed the methods by which our trade with this country might be increased, and pointed out the obstacles which handicap and prevent its development, that it would only be repetition to say anything more on the subject at the present time.

THE CARRYING TRADE.

A few words, however, in regard to the condition of American shipping at this port. During the year 1883, there were 59 arrivals of American vessels; of this number, only 11 left with cargoes for the United States; the rest clearing for Brazil or the West Indies in ballast. In the same time 5 sailing vessels and 34 steamers, of the Lamport and Holt Line, cleared from Buenos Ayres with more or less cargo for New York. In most cases these steamers went through; in

the other, the cargo was transferred at Rio Janeiro to other steamers of the same line bound to the United States. The cargoes taken by these outside vessels amounted to about one-half of the entire shipments, the value being $1,012,109.93, out of a total of $2,455,774.81. If these steamers had brought return cargoes from the United States, they would have served the purpose, which we have these many years been seeking to secure, of a direct steam communication between New York and the river Plate, thus affording our importations hither the benefit of a quick and certain passage. But instead of this, the Lamport and Holt steamers after discharging in the United States crossed over with cargo from our shores to Liverpool; where again they took full cargoes for the river Plate. This circuit, which I suppose, has been profitable to the steamers in question, has been the reverse of beneficial to our American trade; for while it has not furnished us with direct steam facilities for the quick transportation of our manufactures to the Argentine Republic, it has quite destroyed the carrying trade from Buenos Ayres to the United States, which heretofore has been pretty much in the hands of American sailing vessels. During the last year, the Mendoza, an American bark, with auxiliary steam, under the management of Capt. G. W. Tucker, has sought with very gratifying success to enter the trade between Buenos Ayres and New York. The average passages made have been a little less than forty days, which, under the circumstances, is a great improvement on the usual passages by sailing vessels.

PORT FOR BUENOS AYRES.

Nearly all the shipping from the United States, instead of anchoring in the outer roads of Buenos Ayres, now enters the Boca, or port of the Rio Chuelo, a small stream which empties into the La Plata, just on the south of this city. The facilities thus offered for discharging and receiving cargo are very good, a vessel now being able to discharge or load in one quarter of the time which it heretofore required. The work of dredging the channel which leads to this port is not yet completed; but it is sufficiently advanced to show what a very great convenience it will be when ocean-going steamers of the largest tonnage, instead of handling their cargoes ten and twelve miles out in the river, will be enabled to come alongside of a dock. I think this Boca improvement fully solves the problem of a port for Buenos Ayres, the work being accomplished under the auspices of the national Government, and will probably be finished in the course of another year or two. The intention is to construct a basin to the northward of the mouth of the Rio Chuelo, along the city front, with adjacent warehouses, where vessels can pass in and be out of the way of moving craft. The whole thing not only looks well on paper, but cannot fail to be a grand improvement for Buenos Ayres, whose commerce during the last three hundred years has been transacted entirely through the means of lighters—the cost of landing cargoes after their arrival being greater than that of the entire ocean passage.

SAILING DIRECTIONS FOR ENTERING THE RIO CHUELO.

It may be well enough, for the information of American shipping, to state that there is no difficulty whatever in entering the port of the Rio Chuelo. Upon reaching the outer roads it is only necessary to steer from the guard-ship or ponton for the exterior light. This is a wooden frame, about 30 feet square and 15 feet high. This brings you into the

excavated channel; thence steer S. 65° W. for the dikes, which are at the entrance of the little river. The excavated channel is about 200 feet wide, and is marked by red buoys on the north side and black ones on the south. At 2½ miles from the exterior light are two parallel dikes 1,310 feet in length, with an intervening canal 210 feet wide. At the outer end of each of these dikes, or sea-walls, is a light in a wooden frame painted red. These two lights are so arranged that to a vessel approaching in the channel they present two white lights, but when the vessel is outside the channel they present a white and red light, the nearer one being red and the other white. The lights are about 42 feet above low-water mark.

PORT OF BAHIA BLANCA.

In a former report I referred to the port of Bahia Blanca, on the southern coast of this province, with its extensive harbor and fine back country, and also gave sailing directions for entering the bay. I have now to state that it has just been placed in railway communication with Buenos Ayres by the extension of the Great Southern Railroad; and that it promises at no distant day to be a most important shipping point. Already quite a fleet of sea-going vessels have found it out, and henceforth the produce of all that portion of the country seeking a foreign market, instead of being first brought to Buenos Ayres, will be dispatched from Bahia Blanca for Europe direct. Several American ships, loaded with lumber from the United States, have already discharged there, and inform me that the facilities for handling cargoes are generally satisfactory.

In conclusion, it may be said that the business outlook of the Argentine Republic, and especially of the province of Buenos Ayres, continues to be full of encouragement. The only two clouds in the horizon—and these, perhaps, are only transient—are the tendency to overtrading which has taken possession of its merchants, and the persistency of the governing powers in contracting foreign loans for the purposes of internal improvement. Unless these are checked, it is feared that, sooner or later, a commercial and financial revulsion will be the consequence.

E. L. BAKER,
Consul.

UNITED STATES CONSULATE,
Buenos Ayres, March 13, 1884.

EXPORTS FROM THE RIVER PLATE TO THE UNITED STATES.

REPORT BY CONSUL BAKER, OF BUENOS AYRES.

In reports to the Department of State of the date of February 23, 1881, February 25, 1882, and March 21, 1883, will be found the exports to the United States from the River Plate, *i. e.*, from all that part of South America, including Paraguay, Uruguay, and the Argentine Republic, for the years 1880, 1881, and 1882, respectively.* I now forward a table of shipments for the year ending December 31, 1883, officially

* See Consular Reports Nos. 8, 19, and 31.

compiled, as heretofore, from the returns of exports declared at the consulates of Montevideo, Paysandu, Rosario, and Buenos Ayres, the figures from the three first named ports having been kindly furnished me by the consular offices of those ports. I will add that the shipments from Paraguay do not appear separately for the reason that they were not made direct, but are included in the returns from Uruguay and the Argentine Republic. The tables show the amount and official value of each article at the place of export.

Shipments from the river Plate for 1883.

REPUBLIC OF URUGUAY.

Articles.	Montevideo.		Paysandu.	
	Quantity.	Value.	Quantity.	Value.
Dry ox and cow hides ..... number..	399,186	$1,626,392 86	17,385	$73,424 78
Salted ox and cow hides ..... do....	2,698	15,647 21	7,500	45,061 34
Hair ..... bales..	290	91,105 63	.....	.....
Nutria skins ..... do ..	4	2,006 90	.....	.....
Kip skins ..... number..	32,885	53,132 29	2,000	3,716 20
Ostrich feathers ..... cases..	37	19,389 50	.....	.....
Wool ..... bales..	6,948	1,123,770 62	106	11,387 36
Deer and stag skins ..... do ..	6	2,260 64	.....	.....
Hide cuttings ..... do....	157	6,133 81	.....	.....
Horn piths ..... kilograms..	19,613	492 33	.....	.....
Bones and bone ash ..... tons.	9,146½	208,057 04	4,076	98,021
Shin-bones ..... kilograms..	14,164	1,426 88	.....	.....
Dried blood (bags, 407) ..... do....	34,050	2,278 32	.....	.....
Mare's grease ..... casks..	1	88 84	.....	.....
Medicinal roots ..... sacks..	110	7,647 00	.....	.....
Total	.....	3,159,829 97	.....	231,630

ARGENTINE REPUBLIC.

Articles.	Rosario.		Buenos Ayres.	
	Quantity.	Value.	Quantity.	Value.
Dry ox and cow hides ..... number..	45,928	$183,467 97	519,988	$2,093,220
Salted ox and cow-hides ..... do....	.....	.....	11,200	69,696
Horse-hair ..... bales..	47	10,397 14	1,773	486,432
Goat skins ..... do ..	128	54,210 25	1,308	554,227
Nuria skins ..... do ..	74	26,646 48	905	313,056
Feathers ..... cases..	.....	.....	147	91,551
Carpincho skins ..... bales..	20	1,375 17	23	20,954
Do ..... number	.....	.....	22,366	
Wool ..... bales..	139	15,874 52	9,246	1,207,455
Deer and stag skins ..... do	24	3,001 26	2	7,542
Do ..... number	.....	.....	3,466	
Hide cuttings ..... bales..	146	3,746 93	334	11,642
Old iron ..... tons..	40	465 00	1,441	26,080
Horse hides ..... number..	50	55 23	80	84
Sheep skins ..... bales..	15	1,060 87	7	222
Chinchilla skins ..... do....	1	669 24	2	490
Rags and paper stock ..... bags..	.....	.....	16	282
Horns ..... number..	.....	.....	6,000	500
Bones and bone ash ..... tons..	1,724½	47,177 45	1,149	55,980
Dried blood ..... bags..	.....	.....	2,316	7,385
Sundries ..... do....	.....	.....	2	215
Total		348,148 11		4,949,171

It will be seen from the addition of these tables that the total shipments to the United States from the river Plate for the year 18

amounted to $8,686,880.75. Compared with the previous three years the following are the figures:

Year.	Republic of Uruguay.	Argentine Republic.	Total.
1880	$5,456,891 62	$5,994,169 07	$11,451,060 69
1881	6,054,368 37	5,926,693 51	11,981,061 88
1882	4,872,033 58	5,773,092 31	10,645,125 89
1883	3,391,560 88	5,295,319 69	8,686,780 57

So that the shipments from the republic of Uruguay are $1,480,472.70 and from the Argentine Republic $377,772.62 less than in 1882, while the total shipments from the river Plate to the United States are $1,958,345.32 less than for 1882, $3,294,281.31 less than for 1881, and $2,764,280.12 less than for 1880. The following table, which may be of some interest for the purpose of comparison, gives a detailed statement of the total shipment of each article from the river Plate to American ports for the years 1882 and 1883, respectively:

Total shipments from the river Plate to the United States for 1882 *and* 1883.

Articles.	1882.		1883.	
	Quantity.	Value.	Quantity.	Value.
Dry ox and cow hides ..... number	1,392,871	$6,004,767 77	982,487	$3,976,524 91
Salted ox and cow hides ..... do	63,023	394,398 27	21,398	130,394 69
Horse-hair ..... bales	2,640	662,693 84	2,060	587,935 59
Goat skins ..... do	1,043	388,813 09	1,436	608,437 83
Nutria skins ..... do	313	151,552 69	983	341,711 46
Kip skins ..... number	.....	.....	34,885	56,848 49
Feathers ..... cases	171	69,974 40	184	110,940 52
Carpincho skins ..... bales	.....	.....	43	22,329 63
Do ..... number	25,708	28,705 91	22,366	
Wool ..... bales	17,179	2,389,629 49	16,439	2,358,487 75
Deer and stag skins ..... do	9	17,380 61	32	12,804 00
Do ..... number	13,357		3,466	
Hide cuttings ..... bales	1,177	34,671 03	637	21,522 81
Old iron ..... tons	2,202¼	15,804 96	120	26,545 29
Sheep skins ..... bales	.....	.....	22	1,283 66
Horse hides ..... number	2,635	1,063 40	130	139 84
Chinchilla skins ..... bales	11	1,454 80	3	1,160 07
Rags and paper stock ..... bags	23	579 49	16	292 77
Horns ..... number	118,731	11,880 03	6,000	500 00
Horn piths ..... tons	122		2	492 43
Bones and bone ash ..... tons	15,122½	336,458 51	16,096	409,236 06
Shin bones ..... kilos	104,448	1,350 83	14,164	1,426 88
Dried blood ..... bags	18,084	52,913 61	3,073	9,813 03
Mare's grease ..... casks	.....	.....	1	88 84
Medical roots ..... sacks	.....	.....	110	7,647 00
Sundries ..... bags	.....	7,633 06	2	215 52
Total	.....	10,645,125 89	.....	8,686,780 57

This falling off in the volume of exports from the River Plate to the United States, which has been going on for several years, has heretofore been explained by me. It is owing in great part to the fact that the prices of several leading articles in these ports have corresponded so nearly with those in the United States that when the expenses of handling freight and insurance are added there is too frequently no margin left for profits. Under these circumstances the movement towards the United States continues to be characterized by a general sluggishness, if not indeed by an almost hopeless stagnation. In regard to the shipments from each port, during the year 1883, it appears—

1. That from Montevideo there has been a falling off of nearly one-half in the number of hides, compared with the previous year, and a

eneral decrease in almost every other article of export, the total decrease in the value of the shipments being $1,594,095.59.

2. That from the port of Paysandu, while the shipments of bones and one ash are about the same that they were in 1882, there has been a considerable increase in the shipment of hides, the total increase being 113,522.89 in the amount of exports.

3. That from the port of Rosario, there is apparently a great falling ff in the amount of shipments compared with previous years, but this s explained by the fact that during last year a large proportion of the hipments—especially of wool and hides—were invoiced at Buenos yres, and hence appear among the declared exports from the latter ort.

4. From the port of Buenos Ayres, for the reason just stated, there ppears to be an increase of $1,407,128.64 in the amount of exports; ut included in these figures are 9,800 bales of wool and 200,546 hides nd other articles which, while they were purchased in Buenos Ayres, ere in fact shipped from Rosario.

There is nothing of interest to be said in reference to the export trade om the River Plate to the United States. It was anticipated that the light reduction in our tariff on coarse wools would cause a larger amount f that article to find a market in the United States; but it appears, fter all, that the total shipments of wool from this river to our home orts are 740 bales less than they were for the year previous.

E. L. BAKER,
Consul.

CONSULATE OF THE UNITED STATES,
Buenos Ayres, March 4, 1884.

AMERICAN TRADE WITH PERU.

REPORT BY VICE-CONSUL LAPOINT, OF LAMBAYEQUE.

General business has been very small on account of the war and the isturbed state of things. However, as the Chilian forces have now eft this department and peace will probably soon be definitely arranged ith Chili, things will then become more settled and commercial confidence be re-established.

In my report of January, 1883, I called attention to the limited merican trade with this department, and which, since then, has not ncreased.

The high rate of freight of goods by American steamers and by raiload via Panama is a great drawback, which might be remedied if a irect line of steamers would be established from our country to the est coast.

I know of cases where hides from this country were sent through the traits of Magellan via France to the United States, and lard and other erchandise from there by the same route to this country at a cheaper eight than it could have been sent via Panama.

If, therefore, ship-owners and merchants would take this into consideration, and take steps to establish a line of steamers flying our flag, certainly think they would greatly benefit by same.

Another drawback is the almost total absence of American merchants n this department. Nearly all the merchants are English, Italian, and erman, who naturally protect the trade with their own countries, and,

therefore, merchants and manufacturers of the United States should endeavor to get agencies here or send their catalogues and price-lists.

The following is a list of the export duties on Peruvian produce, decreed by the present Government:

Cotton	per 100 kilog..	Sol 1.*
Sugar:		
Concrete	do....	60 cents.
Brown	do....	65 cents.
Other classes	do....	Sol 1.
Hides, ox	each..	25 cents.
Chaucaca	per 100 kilog..	50 cents.
Wool	do....	Sol 1.
Minerals, on declared value, being approved by chemist of custom-house of Callao		3 per cent.
Silver in bars, on value		6 per cent.
Silver, coined, Peruvian		3 per cent.
All other produce and manufacture of the country, on value		3 per cent.

ALFRED LAPOINT,
Vice-Consul.

VICE-CONSULATE OF THE UNITED STATES,
Lambayeque, Peru, January 18, 1884.

RUSSIAN WOOL FOR THE UNITED STATES.

REPORT BY CONSUL VAN RIPER, OF MOSCOW.

I have the honor to submit a report to your Department on the wool production in Russia, which enters largely into the exports from here to the United States. The well-known Russian carpet wool is a product of the southeastern governments, and not to be found equal in length and strength in any other part of the world. The most valuable are the "Savolga fleeces," of 4 to 6 inches in length, and as the climate is a very trying one in these provinces, the wool becomes soft and downy. The next best quality are the "Donskoi fleeces," to be found in the steppes on both sides of the river Don. The production of the Savolga fleeces has diminished considerably during the last decade, as the original breeders of this kind of sheep, the Khirgese, are becoming poorer from year to year. The pastures of these "nomads" extended as far as the Volga, and the rich, flat country bordering the river had placed them in the position of keeping large herds of steppe sheep. Gradually the pastures of the Khirgese were cultivated by the Government who also took possession of them, and therefore they were driven back into the uncultivated steppes, where, in consequence of the bad climate and the scarcity of food, their live stock diminished considerably. Peasants settled on this land, formerly used for pastures, and began to breed the steppe sheep. These peasants, and those in the Don districts, are the only ones that breed this kind of sheep, which do not require shelter nor much care. Wealthier peasants occupy their time with breeding the Merino sheep, which pays them better. The difference in price is as follows: The "Savolga" or "Donskoi" fleeces realize from 10 to 12 rubles against 28 to 32 rubles per pood for the "Merino fleeces." The trade with carpet wools is consequently a most difficult one. While Merino wool is brought into the market in large quantities, carpet wool is brought by the farmers in small quantities, and sold again to the wool-cleaners,

* Sol, silver=$1.08.

after having washed and assorted the same, bring it to market. ...wool is very often mixed with "burrs," which grow in abundance ...veral of the districts mentioned, and are difficult to remove. The ... important wool-washers have their offices in Moscow, as the best ...t wool is brought here for consumption of the inland as well as for ...t purposes. This city is the center for all dealers and manufacturers ...ssia. The wool that comes on the market in the interior, say ...kow, Rostow on the Don, is very often very unreliable, and great ...and observation are necessary when purchasing; whereas the wool ... in Moscow can better be relied upon. This also applies to the ...el hair," "autumn," and "lambs' wools," which are likewise used ...e manufacture of carpets; this is the cheapest and best material ... at a reasonable price for this purpose. The trade in these articles ...ıfined almost exclusively to Armenians and Tartars, who realize ... their sale, partly at the "Nishny fair," and partly at Moscow. ...price of this kind of wool differs according to quality and purity. ... dealers are known to be most unreliable; they try all possible ... to give the wool a heavy weight, by the means of sand, &c.; a ...n which foreign buyers fear, who visit the "Nishny fair" to purchase ... the wool they are in need of.

...e production of camel hair has not diminished up to date, as the ...l, at present, is the only means of transport between the European ...ıfacturing districts of Russia and its colonies in Middle Asia, and ...e business relations are increasing every year, more attention is ... to the breeding of the camel, but, doubtless, this will diminish ...ually as the construction of railways steadily progresses. Owing ...e direct relations between America and Russia, which are increasing ...y year, it seems that the time has arrived when it would be more advantageous to American merchants and manufacturers to purchase their ...sary quantity "direct," as importing firms in New York, Philadelphia and Boston have already done, initiating a large trade, and which ...reasing month by month, which they evidently find profitable, as ...rders, according to invoices presented to me for certification, in...e. With *bona fide* orders in the hands of reputable commission ...hants, they are often in position to purchase exceptional parcels of ... with advantage, if firm orders are in hand. On the contrary, if ...les must be sent, requiring so much delay with correspondence, ...parcels are sold, which we could safely recommend to our friends. ...rm, E. G. Van Riper & Schnee, are trying to push this export business, but we must meet with support from America, as Germany and ...and are active competitors for this trade, which ultimately goes to ...United States, involving double or treble commissions, thereby adding ...o the cost. In conclusion, I would call attention to the packing of ...

It is generally very loosely packed, but I have called the attention ...of shippers to the importance of packing more carefully, as the Atlantic steamers charge by measurement, and not by weight, and another ...ntage is that proper packing protects the wool against undue ...ture.

E. G. VAN RIPER,
Consul.

...ITED STATES CONSULATE,
Moscow, December 23, 1883.

AUSTRO-HUNGARIAN EXPORTS TO THE UNITED STATES.

REPORT ON THE DECLARED EXPORTS FOR THE YEAR 1883, BY CONSUL-GENERAL WEAVER.

I have the honor to inclose herewith a statement showing the value of declared exports from the consular districts of Austria-Hungary to the United States in 1883.*

The total value of all articles declared before and authenticated by the consular officers in 1883 is $8,723,797, being an increase of only $15,670 when compared with 1882. The leading four articles are prunes, 25 per cent.; glassware, 14 per cent.; buttons, 13 per cent.; and textiles, 12 per cent.; aggregating the sum of $5,598,128, or over 64 per cent. of the whole.

The following contains twenty-three articles, each exceeding an amount of $50,000, which, when compared with the years 1882 and 1881, will present in a succinct manner the relative importance and changes in each article mentioned, viz:

Articles.	1883.	1882.	1881.
Dried fruits	$2,172,819	$1,795,197	$1,404,610
Glassware	1,236,100	1,682,544	1,465,254
Buttons	1,128,222	1,144,523	967,305
Linen and cotton textiles	527,711	401,155	480,327
Fancy goods	367,670	464,657	362,498
Argols	342,445	254,041	174,537
Glove-leather and skins	287,002	285,607	253,514
Woolen textiles	281,125	313,967	289,331
Gum	252,760	182,994	233,160
Silk textiles	225,543	146,113	83,158
Barrels, empty, petroleum	205,488	185,371	184,983
Porcelain and pottery	190,495	208,468	159,478
Drugs and chemicals	171,070	161,502	279,253
Lentils and beans	161,217	95,100	20,533
Smokers' articles	121,324	210,621	185,351
Fans	107,238	82,840	16,517
Mineral water	96,985	63,886	61,523
Wine, beer, and liquor	83,062	116,078	78,474
Wool	79,172	19,604	69,540
Furniture, bent-wood	76,506	40,668	36,268
Insect-powder	64,216	59,477	96,085
Gloves	60,086	66,097	83,393
Meerschaum, crude	51,363	16,453	68,063
All others	434,178	711,164	442,506
Total	8,723,797	8,708,127	7,501,661

An examination of the foregoing table, in connection with the digest of invoice books, will show in all the consulates a further increase over the past years, with the exception of Prague, which exception resulted principally from the decrease of glassware, viz, from $1,672,928 in 1882, to $1,216,730 in 1883, being a decrease of 28 per cent. It would appear that the falling off in the exports of glass might be attributed, partly at least, to the additional 5 per cent. entry duty which went into operation in July last, as may be seen from the following table

*Published in "Declared exports for third and fourth quarters of 1883."

giving the exports of glassware from Prague for each quarter during the last two years:

Period.	1883.	1882.
First quarter	$267,797	$371,[illegible]
Second quarter	358,451	381,[illegible]
Third quarter	406,383	713,[illegible]
Fourth quarter	183,099	204,[illegible]
Total	1,216,730	1,672,[illegible]

The data of this table show that for the last six months of 1883 the decrease in the shipments, when compared with like period of 1882, amounted to $333,908, or nearly 36 per cent. It is quite possible, however, that the increased duty is only one factor in the change, as it is well known that the glass industry comprising the fine cutting and decoration of the Bohemians, is making great progress in the United States, which will absorb much of the work at present done in Bohemia, just as soon and in so far as the difference in the wages and the modes of life of the workmen in the United States and Bohemia disappear. As the expense of living in Bohemia is constantly increasing, and wages are further increased by constant emigration to the United States, conditions for successful competition are daily becoming more favorable to the glass industry of the United States.

On the other hand, dried fruits, argols, silk textiles, consisting generally of cheap, fancy silks, and largely for cravat material and fans, show large and constant increase during the last three years.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, January 16, 1884.

COMMERCE AND INDUSTRIES OF MEXICO.

REPORT BY CONSUL-GENERAL STROTHER.

The material improvement initiated in this country under the administration of President Diaz has continued without any serious interruptions up to the present date. With the extension of the various lines of railroad in different sections of the country, there has been a corresponding movement in agriculture, manufactures, mining, and commerce, and as the rapid development of all these enterprises and interests has successively revealed the incompatibility and insufficiency of existing laws and economical systems, the statesmen and jurists of the country have been actively and earnestly endeavoring to accommodate the past with the present, and with a prudent avoidance of radical and experimental changes to adapt their legislation and fiscal system to the requirements of a renovated and progressive national existence. This state of rapid transition presents so many interesting and important subjects for consideration that it would be impossible in this paper even to enumerate them all or to treat any of them with more than a superficial notice, reserving a fuller treatment of the leading interests for special reports.

MEXICAN AGRICULTURE.

the most encouraging and healthy symptoms of the new era is igent and active interest manifested by the Mexican Govern- onded by wealthy and educated land owners, in developing rto neglected agricultural capacities of the republic. The cul- of the great staples—coffee, sugar, tobacco, hemp, and cotton— considerably extended, as has also been the production of rn, barley, fruits, and vegetables, which constitute the princi- of the people.

vernment has made liberal arrangements for the introduction vation of many of the most desirable plants and products from ountries, the tea from China, the vine, the olive, and the silk from Europe, distributing gratuitously millions of seeds and the most enterprising land-owners, and establishing colonies of erman, and Italian cultivators, skilled in the production of and silk, and other valuable plants and fruits adapted to the There has also been a lively interest manifested (Governmental ridual) in the introduction of foreign horses and cattle for the ient of the domestic breeds.

reciate and properly understand the agricultural capacities pects of this country, it will be necessary to know something ople directly engaged in the business. These are divided into ict classes, as different and distant from each other in charac- es, methods, and results as it is possible for us to imagine ltivating the same soil and living under the same Government. is the independent Indian, who is in all respects a communist, his village of adobe or cane-built huts, owning and cultivat- djacent lands in common with the people of his tribe, work- dividing the proceeds according to laws which antedate the conquest, and using the same implements and methods that l by his ancestors under the Montezumas.

e of his simple ways and primitive tools, the aboriginal of this eems to have possessed considerable skill, and to have attained sfactory results from his agriculture. He knew when to sow to gather. He understood all about irrigation, and the dikes ls of former centuries still stand as monuments of his patient ice. Nor was he content with the simple necessities or even ies of food. He planned vast pleasure gardens and planted rks and parterres of gorgeous flowers, and adorned his grounds ficial lakes and fish-ponds.

is Spanish conquerors the Indian agriculturist doubtless l arned g; notably, the use of horses, asses, and mules. But the long despotism which crushed out all the individual independence ity of the race has left its humiliating impress upon this as other arts practiced by the ancient Mexicans. At the present Indian agriculturist rarely accomplishes more than a meager rable maintenance for his family, a surplus, perhaps, to pay his the state and his dues to his curé, and something over in pros- asons.

ier class is composed of the large landed proprietors, whose ments resemble the historic feudal estates of the Old World. e generally men of wealth and education, with ideas liberalized n travel, and with a comprehensive knowledge of their busi- ith them agriculture is a science, and they readily accept ved methods, and are ready to experiment with new ideas and

adopt any new agricultural machinery that may be presented. The establishment of a first-class "hacienda" will cost from a quarter to a half million of dollars. The extensive and massive buildings of stone, adobe, and stucco, including dwellings, barns, stables, cattle-sheds, chapel, and offices, are all inclosed in a heavy wall from 20 to 30 feet in height, the angles and the gate protected by projecting turrets pierced for musketry. This enceinte is frequently surrounded by a moat, the whole having more the aspect of a fortress than of a farm-house. At night all the live-stock of the estate, the proprietor and his family, his superintendents, assistants, paymaster, priest, and trained servants, with an ample supply of provisions and arms, are gathered within this castellated inclosure for rest and shelter, and, if summoned, to man the walls and defend the place against the predatory assaults of highwaymen or bands of hungry revolutionists. These attacks, frequent enough in former times to justify the defensive precautions of these agricultural castles, are becoming more rare of late years, although we still hear of them from time to time in distant parts of the country. The laboring peons of these estates, secure in their poverty, generally live outside the walled inclosure in cane-built or adobe huts grouped in irregular villages, picturesquely shaded by groves of plantains, papagas, and other tropical fruit trees. In some instances each hut has its patch of arable ground attached for the private benefit of the occupant. Sometimes these laborers are paid a per diem with a stipulated allowance of food, amounting in all to about 37½ cents per day. In other haciendas they work by the job, and frequently can earn from 75 cents to $1 per day. As agriculture cannot be carried on in this country without irrigation, each hacienda or cultivated district must establish and maintain its system (more or less costly) of dams and canals, to secure and distribute the necessary supplies of water during the dry season, a fertilizer which costs the great proprietor considerable sums of money, and which the Indian communities obtain by combined and patient labor.

It will thus appear that between the baronial proprietor and capitalist, who cultivates by wholesale, and the simple Indian who scratches a scanty living out of the soil, there is no intermediate class of small independent farmers such as form the bone and sinew of our northern population, and under the present conditions of agriculture in this country there would seem to be no room for such a class. With its advantageous geographical position, its incomparable climate, its fertile soil and capacity for the production of so many valuable specialties in which none of the great commercial nations can compete, yet which all require with an increasing and unlimited demand, it is evident that the future prosperity and greatness of Mexico must depend mainly on the development of her agriculture. Of the several causes which have heretofore limited and embarrassed this development, some are already in process of removal, and all are susceptible of amelioration by the application of capital and science.

The lack of adequate transportation, which has heretofore discouraged production, will be supplied by the completion of the present and projected railroads. The vexatious and oppressive system of internal and inter-State duties, imposts, taxes, tolls, charges, forfeits, fines, penalties, and confiscations, crushing to all enterprise and ruinous to productive industry, will also disappear before the requirements and the commercial enlightenment which accompanies an extended railroad traffic.

With the question of "scarcity of water," it will require time and money to treat successfully. This scarcity affects in a greater or less

gree all the elevated lands in the republic and those regions where climate is most healthful and agreeable. Immense districts of untry, otherwise fertile and arable, now lie waste and uncultivated the absolute lack of this essential element of life and growth, for en or eight months in the year consecutively. In some places arte- n wells have been tried with limited success. Near this city lands ve been profitably irrigated by means of steam-pumping machinery, l there is no doubt that, with due regard to localities and circum- nces, both these processes may be profitably employed to extend the its of Mexican agriculture. Nevertheless, the main reliance for such ension must be on the natural water supplies of the country and nate, the preservation and distribution of the streams, lakes, and mer rains, as practiced by the people of this and other dry countries m times immemorial, but on a more extended scale and with im- vements, perhaps, in the details. The irrigating tanks of India, ich have clothed whole kingdoms of arid and desert lands with a ment of wealth and beauty, are suggested as models for similar ks in Mexico. The numerous deep and extensive barrancas worn the slender water-courses as they wind their ways from the elevated tral plains down to the oceans on either hand would afford many venient sites for the location of such dams, and under their in- nce large districts now barren and uncultivated might be covered h profitable crops.

n conclusion, and in reply to numerous letters received from the ited States inquiring concerning the inducements and advantages red to agricultural immigrants in this country, I am constrained to that individual immigrants, with nothing more to rely on than their rgy and industry, are not likely to improve their condition by com- here. On the other hand, organized capital, directed by practical nce, may find in Mexican agriculture a varied and profitable field of erprise.

he total agricultural product of the republic for 1883 is approxi- ely estimated at $161,079,500.

MEXICAN MANUFACTURES.

he ancient Mexicans possessed considerable skill as workers in stone, als, wood, leather, pottery, and textile fibers, and at the time of conquest the Spaniards found their domestic manufactures suffi- ntly varied and advanced to supply all the necessities of the (then) st civilized society on this continent, as well as many articles of ury and elegance so imposing as to dazzle and astonish their con- rors. These marvelous products of ingenuity and patience, wrought a people to whom time seems to have been of no especial value, have g since been superseded by European arts and have disappeared from country, but at the present day the greater proportion of the mestic utensils, laborers' tools and implements, and articles of cloth- in common and current use are of Indian manufacture, differing y little or not at all from those used before the conquest. Even in capital of the republic, where European ideas and habits most gen- lly prevail, a large proportion of the population now use no other than the traditional Indian mat, and find their principal food in Indian corn, ground by hand on the "metate," a hollow stone, ntical in form and character with those used four centuries ago the wives of the Indian emperors to prepare the corn and chocolate their august lords. In the capital, as throughout the republic, the

kitchens are furnished with cookery vessels of Indian manufacture, spoons, bowls, and platters of horn, wood, and "calebasa," baskets and trays of woven rushes and palm leaves, unchanged in form and character from those described in the earliest histories of the country. The use of modern kitchen utensils of metal is extending of late years, but is still rather the exception than the rule even in the city of Mexico.

Hand-woven "serapes," rebosas, and various garments of cotton, hemp, ixtle, and other fibers form the clothing of a great proportion of the population, whose heads are also covered with the national sombrero of woven palm leaf, and the feet (of those who are shod at all) protected by the antique leather sandal.

The production of all these articles of general use, and more or less perishable, creates and maintains an immense domestic industry in this country, which, as it is wholly individual and unorganized, is very imperfectly known or recognized in statistics.

The organized manufactures of cotton, wool, glass, paper, porcelain, furniture, machinery, &c., have extended their operations and improved the quality of their products. The republic has always encouraged the establishment of these organized industries, and, solicitous to increase their number and variety, has offered them apparently ample protection by its high tariff—a protection to some extent neutralized by internal taxes upon the same industries. This advantage is further lost from the fact that the agriculture of the country does not produce sufficient material (cotton and wool) to keep the factories running, and for this reason, added to the inferior quality of the cotton produced, the manufacturers are obliged to import three-fifths of their raw material from the United States, and a considerable proportion of their wool from Australia. In spite of taxes, scarcity of raw material, and foreign competition, the manufacture of cotton and woolen goods in this country seems to be a prosperous business. Most of the cotton-mills confine themselves strictly to the production of simple "manta" (unbleached muslin), as the demand for that material alone (which constitutes the principal clothing of the people) far surpasses the present capacity for production. Some of the factories turn out prints of good quality and tasteful patterns, which find ready sale at paying prices. A statistical list of the cotton and woolen factories is herewith inclosed.

Up to date none of the Mexican manufactured goods will compete in quality and style with similar articles imported from Europe or the United States, but with a praiseworthy spirit of emulation and the encouragement of the Government great advances are being made in that direction, and when the native capacities of the Indian race for delicate and elegant handiwork shall have been further developed by education at home and abroad, Mexico may in time compete with France or China in their hitherto unrivaled specialties.

The present visible limit to the production or the importation of high-class goods may be found in the simple habits and contented poverty of the great masses of the population of this country. A people that has for consecutive centuries been cheerfully contented in cane or adobe huts, with dirt floors, furnished with a few mats and earthen pots, whose clothing consists of half a dozen yards of unbleached cotton cloth, and whose sufficient food is maize, frijoles, volunteer fruits, and pulque, is not likely, even under the extraordinary stimulus of free schools and railroads, to change its habits and develop suddenly into a nation of competitive producers and valuable consumers, and consequently any calculations upon a very great or rapid increase of the capabilities of this country for production or consumption must be based upon foreign

l and foreign immigration, and there would seem to be no reason ıbt that with the great and varied attractions offered, and the pres- ıd increasing facilities of access to the country, that in the near : both these essential elements of progress will be abundantly sup-

MEXICAN MINING.

ce the days of the Spanish conquest the precious metals, silver old, seem to have absorbed the attention and energies of the Mex- ople to the neglect and exclusion of many other products which er countries have proved to be far more reliable and enduring s of wealth and power, and which are to be found here in rich and l abundance.

ıddition to the very notable and increasing movement in silver old mining, we hear daily of the discovery and denunciation of ›eds, peat, petroleum, asphaltum, iron, copper, tin, salt, marbles, ›ther valuable fossil products hitherto unknown or neglected, 'hile we have no available statistics on this subject, and are aware the value of many of these discoveries is not yet sufficiently ›d, yet it cannot be doubted that the movement in this direction ›sult in many important discoveries, and we know that American ıanies and enterprising individuals are already exporting some of product with flattering success, notably the petroleum and asphal- f the States of Vera Cruz and Tamaulipas. In addition to the › and interested explorations of individual speculators, the Mexi- overnment has sent out various scientific commissions to study and t on these important subjects. All the statistical tables exhibiting ılative production of silver and gold in Mexico I have already for- ›d to the Department with my report on the currency.

COMMERCE OF MEXICO.

›ographically considered Mexico labors under many serious disad- ges to commerce, whether external or internal. Her coasts on oceans are broad belts of intolerable heat, disease, and aridity, ›xcept in the few small seaport towns, nearly uninhabited. The mass of the population of the republic, all her great cities, her tries, wealth, &c., are strictly inland, centering in the capital city, ding northward and southward on the elevated plains which lie ›en the double cordillera which forms the backbone of the conti- and sloping east and west toward the Gulf and the Pacific Ocean. ıe whole extent of her coast-line there are but two natural harbors ıble for first-class modern merchant vessels, those of Anton Lizardo, e Gulf, and Acapulco, on the Pacific. All the other so-called sea- now used by commerce are open roadsteads, dangerous in rough ıer and only approachable in lighters, or are located on rivers the nces to which are closed to ocean traders by shallow sand-bars. Government has recently undertaken to open and improve several ›se ports, but the projects are expensive and the results uncertain. ıatural obstructions and difficulties in the way of inland traffic are ely less observable. Mexico is entirely wanting in navigable rivers akes. Her fertile districts, capital cities, and centers of popula- ›parated from each other by long distances, arid districts, immense s of mountains, and vast barrancas washed out by her rapidly de- ling water courses. These difficulties were partially overcome by ›paniards, who constructed a noble system of highways and bridges

extending between the principal cities of the viceroyalty, but from the nature of the soil were immensely expensive to construct and difficult to maintain. During the long and ruinous wars of the independence and the civil wars which followed, these highways went rapidly to destruction, and notwithstanding recent repairs and reconstructions the general condition of Mexican highways is not encouraging either to commerce or travel.

But all these natural and accidental disadvantages combined may be regarded as nothing in comparison with the crushing and suffocating influences brought to bear on Mexican commerce, foreign and domestic, first, by the exclusive policy imposed by the mother country during the three centuries of Mexico's colonial vassalage; secondly, by the system of internal and inter-State duties and custom-houses, inherited from Old Spain, which, although discarded in theory and unrecognized in law, still practically vexes the internal commerce of the republic. In spite of these disadvantages, natural and economical, the commerce of the country has been gradually but steadily increasing from year to year, as will appear from the inclosed tables of exports and imports. The American steamship lines plying between Vera Cruz and New York and Vera Cruz and New Orleans have doubled their service. The English, French, and German steamers continue to ply between Vera Cruz and their respective national ports with regularity and increasing freights. A Mexican steamship company has been established for direct trade between the Mexican Gulf ports and Europe, and this line has already commenced its voyages.

In addition to the Pacific Mail Steamship Company plying between Panama and San Francisco, touching at intermediate Mexican ports, a new Mexican company has been recently chartered to establish lines of steamers to trade between the Pacific ports and China, Japan, and the Philippine Islands, with the privilege of embracing San Francisco and the Pacific ports of Central and South America in their programme. To these national enterprises the Mexican Government has assured valuable privileges and franchises, as will appear by the inclosed translation of an act of Congress. There is also a Spanish steamer which plies between this country and Spain, and an increasing coasting trade in Mexican steam and sailing vessels.

But it is in the progress and development of its interior commerce and inland transportation that Mexico appears now to be most deeply interested, as it is also the question in which the United States is most directly concerned. In early times there was a well organized and active commerce carried on between the various tribes or nations which occupied this portion of the western continent, on the backs of the Indians, the only means of transportation then known or available, there being no indigenous beasts of burden found in Mexico. The Spaniards introduced the horse, the ass, and the mule, which since the conquest have shared the carrying trade with the Indians. These animals seem to have prospered on the new continent, and for centuries have constituted a considerable proportion of the wealth of this country. The ass, as the cheapest, most manageable, and easily maintained, occupies the position of the domestic drudge, the carrier of the humbler traders, and neighborhood traffic. The poorest Indian may own an ass, which costs but $5 to purchase, and nothing for maintenance, and if he accumulate a dozen or more of these animals he considers his fortune established. The mule is costlier and not so docile, but is more available for long journeys and carries heavier loads. He is the principal draft animal of the country, being the motive power for all transportation on wheels,

, the lumbering freight wagons of the highways, tramway cars, portation and artillery departments of the military service, coaches, and diligencias, and very commonly for the pleasure of the wealthy. The Mexican horse, small, active, enduring, ed, the direct descendant of the Andalusian barb, is generally er the saddle, and less frequently as a packing or draft animal. hstanding the cheapness, abundance, and easy maintenance of al transportation in Mexico, it is surprising to observe how roportion of the internal commerce of the country is still car- y the Indians on foot charged with the traditional crates and , unchanged in form or material from those carried by their ıcestors; and on all the commercial thoroughfares of the coun- st droves of asses and mules, trains of heavy, creaking wagons, gayly attired and armed horsemen, the principal figure is still n peon, alone, in companies, or very often accompanied by his ıch charged with a crate of marketing or pack of merchandise, tely adapted to the age and sex of the respective carriers, the ırely without a baby swung in a "rebosa" so as to serve as a eight for her allotted pack, and followed by one or more junior from three to five years old, who trot along with bent knees and shoulders thrown forward, as if in training for the burden ey are destined to carry through life.

ganizations of "arrieros," or muleteers, are of Spanish origin, he carrying trade between distant points and over difficult he fidelity of this class is proverbial, and the drivers do not o risk their lives in defense of their charges. There are also wagons which carry heavy freights over the more practicable hese and the arrieros have their offices and agencies in the ere their business is conducted somewhat like that of our ex- es in the United States.

vel on the main highways there are lines of stage-coaches, or , generally of American manufacture and resembling those n use with us fifty years ago. In the greater portion of the raveling is only practicable in the saddle or in litters carried s' shoulders, or by mules.

a of building railroads in Mexico was contemporary with their ıtal introduction into England and the United States. As 837 a concession was obtained for a railroad from Vera Cruz to al capital. The route was reconnoitered and preliminary sur- menced, and after many delays and vicissitudes the road was l and inaugurated on the 1st of January, 1873. Before this since, the territory of the republic has been covered over with of railroad projects and concessions, some of which have been d or forfeited for lack of means to carry them into execution; stained by the Government, and by Mexican capital, have been d are progressing with more or less rapidity, and the greater especially including those charters and privileges held by the ıve been assigned to and absorbed by companies of American s, under whose direction the most important of these projected being vigorously and rapidly pushed to completion. Already he most noted cities and State capitals are united by rail with al capital, and by the middle of March next the city of Mexico ıe completion of the Mexican Central through Chihuahua and be put in direct connection with the railroad system of the ates. The Mexican National Construction Company, a work of ot greater importance, within another year will likewise have

completed its connections with the same system at Laredo, Tex. The inclosed map, recently published, will exhibit the direction and progress of all the projected and chartered lines. The opening of these thoroughfares, and the anticipated adoption of the recently proposed commercial treaty, must operate changes in the internal and external commerce of Mexico which it would be difficult now to estimate.

The laws of Old Spain, based on the civil law of the Romans, modified by the Goths, the Visigoths, the Church, and the Moors, were sufficiently confused when they were introduced into Mexico some three hundred and sixty years ago. Since that date, with the addition of the special legislation of the Spanish Crown for the Indies, the edicts, decrees, and enactments of conquerors, viceroys, bishops, juntas, councils, emperors, military chiefs, dictators, presidents, and congresses, the acts of one hundred and thirty-six Governments, many of them initiated and perishing amid violent domestic revolutions and the storms of civil and foreign wars, it is not surprising that Mexican law is embarrassed with antiquated forms and anomalies, confusion, contradictions and uncertainties. Steps have been taken from time to time to bring order out of this chaos, and more especially during the last two presidential terms of peace and prosperity the Government has occupied itself seriously in the important work of reforming and codifying the laws of the republic, to the end that the administration of justice may be more regular and uniform, and the system of jurisprudence more directly in accordance with the requirements of the new era of prosperity and progress which appears to have dawned upon the country.

A revised and reformed military code has recently been completed and published. The civil code, in like manner revised and reformed, will shortly be promulgated. A thoroughly reformed postal code goes into operation on the 1st of January, 1884. This code reduces the interior letter-postage from 25 cents to 10 cents on the half ounce, and is in other respects modeled as nearly as practicable after the postal system of the United States. Competent economists are engaged in revising the foreign tariff laws, and, in view of the anticipated opening of direct railroad traffic with the United States, the President of the republic called a conference of the States to consider the practicability of abolishing the "alcabala" and inter-State customs. In response to the call, the governors of the respective States each appointed two delegates, who assembled at the capital in October last, and, after some deliberation, published a report which exhibited the incompatabilities, disadvantages, and abuses of the system in the most convincing manner, acknowledging at the same time that, as all the state governments were more or less dependent on the "alcabala" for their revenues, they could not recommend its present abolition. Indeed, its actual existence was in direct violation of an article in the constitution of 1857, and a number of the leading States had tried the further experiment of prohibiting it by legislative enactments, but a necessity stronger than law had compelled all of them to withdraw their opposition and acquiesce in its continuance.

The report concluded with a recommendation that Congress should at once legalize a practice which a constitutional prohibition had failed to prevent, and which, under existing circumstances, it would be impolitic to suppress entirely. In deference to suggestions made by the conference, Congress has passed a law modifying and limiting the authority of the State and municipal custom-house offices, so as to protect international trade and travel, in a measure, from the interruptions and vexations incident to the system. There would, however, seem to be

ınt prospect of a definite and complete suppression of this crush-
em, but rather a tendency toward an increase of taxes in all
forms throughout the republic, owing to the fact that both the
Government and some of the States have engaged more zeal-
the encouragement of public improvements than the state of
easuries will justify.
ose with this report a number of statistical tables, written and
articles, relating to the subjects treated, regretting, at the same
at I have failed to obtain other valuable statistical information
ch I have waited in vain for several months.

DAVID H. STROTHER,
Consul-General.

CONSULATE-GENERAL, *Mexico.*

ed with the foregoing report were the following tables and statements, com-
Consul-General Strother:

e of agricultural products.
ation of real estate.
of cotton and woolen mills.
of steamship lines.
nization of army and militia.
of drinks made in Mexico.
slation of law encouraging national vessels.
of occupations in Mexico City.]

No. 1.—*Agricultural products of Mexico in* 1883.

re grown.	Chick-peas.		Cotton.		Sesamum.	
	Kilograms.	Value.	Kilograms.	Value.	Kilograms.	Value.
.....	331,000	$16,555	.....	.....	.....	.....
.....	.....	.....	566,600	$70,826	.....	.....
....	124,600	7,120	2,475,000	309,375	.....	.....
.....	.....	.....	67,560	19,705	.....	.....
.....	.....	.....	504,000	168,000	.....	.....
.....	319,900	11,425	10,560,000	3,520,000	520,000	$38,000
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	108,500	5,425	.....	.....	.....	.....
.....	651,000	27,900	.....	.....	35,900	2,500
....	.....	.....	1,980,000	495,000	1,178,600	83,000
.....	1,190,000	51,000	420,000	140,000	432,000	30,000
.....	.....	.....	1,500,000	156,250	.....	.....
... .	590,520	29,526	2,448,000	306,000	123,579	8,000
.....	.....	.....	1,500,000	500,000	.....	.....
.....	228,760	13,072	2,928,000	854,000	.....	.....
.....	509,600	25,480	.....	.....	.....	.....
ıntes	50,120	2,506	.....	.....	.....	.....
ıtosi	.....	.....	.....	.....	.....	.....
....	465,000	22,750	.....	.....	.....	.....
....	641,200	27,480	.....	.....	.....	.....
....	312,900	15,445	228,600	66,675	120,950	7,500
.....	1,890,560	81,024	.....	.....	99,270	6,000
.....	.....	.....	.....	.....	.....	.....
.....	2,422,000	103,800	.....	.....	550,000	40,000
....	2,762,200	96,650	.....	.....	.....	.....
ıtrict	52,500	4,125	.....	.....	.....	.....
fornia	.....	.....	.....	.....	.....	.....
.....	12,771,360	543,283	25,187,760	6,605,831	3,060,290	215,000

No. 1.—*Agricultural products of Mexico in* 1883—Continued.

States where grown.	Aniseseed.		Indigo.		Rice.	
	Kilograms.	Value.	Kilograms.	Value.	Kilograms.	Value.
Sonora					610, 000	$59, 000
Chihuahua	38, 000	$35, 000			210, 000	18, 000
Coahuila					380, 000	32, 000
Nuevo Leon						
Tamaulipas					1, 125, 000	94, 000
Vera Cruz	32, 000	3, 000			860, 000	72, 000
Tabasco					920, 000	76, 000
Campeche					390, 000	25, 000
Yucatan					1, 300, 000	98, 000
Chiapas			36, 000	$45, 000	396, 000	33, 000
Oaxaca	390, 000	32, 000	58, 000	87, 000	240, 000	19, 000
Guerrero	38, 000	3, 800	2, 000	3, 000	290, 000	21, 000
Michoacan	40, 000	4, 000	42, 000	63, 000	850, 000	70, 000
Colima			6, 000	10, 000	1, 750, 000	140, 000
Jalisco	95, 000	8, 000	10, 000	15, 000	1, 075, 000	91, 000
Sinaloa	16, 000	1, 500	22, 000	35, 000	610, 000	52, 000
Durango					375, 000	31, 000
Zacatecas	95, 000	8, 000			950, 000	78, 000
Aguas Calientes						
San Luis Potosi					725, 000	60, 000
Guanajuato	54, 000	5, 000				
Querétaro			20, 000	30, 000		
Hidalgo	110, 000	11, 000			205, 000	17, 000
Mexico	25, 000	2, 400				
Morelos					1, 500, 000	130, 000
Puebla	190, 000	17, 000			468, 000	39, 000
Tlaxcala						
Federal District	65, 000	6, 000				
Lower California						
Total	1, 188, 000	105, 200	196, 000	288, 000	15, 219, 000	1, 246, 000

States where grown.	Sugar-cane.		Cacao.		Coffee.	
	Kilograms.	Value.	Kilograms.	Value.	Kilograms.	Value.
Sonora	2, 210, 000	$276, 000				
Chihuahua						
Coahuila	440, 000	55, 000				
Nuevo Leon	2, 600, 000	320, 000				
Tamaulipas	2, 400, 000	300, 000				
Vera Cruz	12, 500, 000	1, 550, 000			5. 880, 000	$1, 470, 000
Tabasco	1, 100, 000	137, 000	1, 050, 000	$880, 000	176, 500	50, 000
Campeche	600, 000	75, 000				
Yucatan	3, 200, 000	400, 000				
Chiapas	165, 000	20, 000	362, 400	241, 600	329, 300	82, 200
Oaxaca	7, 100, 000	885, 000	7, 000	6, 000	195, 500	48, 000
Guerrero	850, 000	106, 000	18, 200	8, 300	42, 000	10, 000
Michoacan	8, 550, 000	1, 070, 000			495, 500	121, 000
Colima	102, 000	13, 000	4, 250	4, 250	900, 000	225, 000
Jalisco	2, 950, 000	368, 000				
Sinaloa	3, 150, 000	395, 000				
Durango						
Zacatecas						
Aguas Calientes						
San Luis Potosi						
Guanajuato	126, 000	16, 000				
Querétaro	2, 250, 000	280, 000				
Hidalgo	370, 000	46, 000				
Mexico	1, 050, 000	131, 000				
Morelos	13, 200, 000	1, 650, 000			168, 000	52, 000
Puebla	5, 250, 000	656, 000				
Tlaxcala						
Federal District						
Lower California	45, 000	6, 000				
Total	70, 208, 000	8, 735, 000	1, 436, 850	1, 140, 150	8, 186, 800	2, 074, 200

No. 1.—*Agricultural products of Mexico in* 1883—Continued.

s where grown.	Barley.		Pepper.		Spanish peas.	
	Kilograms.	Value.	Kilograms.	Value.	Kilograms.	Value.
.....	.....	.....	699, 900	$58, 330	247, 900	$10, 770
ahua.....	9, 993, 300	$281, 500	1, 008, 400	82, 600	2, 008, 780	56, 540
ila	37, 000, 000	782, 000	624, 900	52, 070	70, 400	3, 960
Leon	546, 700	9, 620	1, 169, 100	97, 420	.....	.....
ulipas	475, 700	13, 400	868, 500	72, 480	.....	.....
Cruz	7, 029, 000	148, 500	2, 725, 800	227, 150	280, 000	12, 000
co	.....	.....	560, 500	46, 710	.....	.....
che	.....	.....	517, 800	43, 150	.....	.....
an	.....	.....	1, 656, 600	138, 050	.....	.....
as.....	.....	.....	1, 318, 400	109, 870	.....	.....
a	615, 560	13, 000	4, 341, 000	316, 750	297, 500	11, 130
ero.....	.....	.....	1, 853, 700	115, 850	479, 000	21, 000
acan	5, 928, 500	167, 000	3, 893, 200	324, 430	413, 000	18, 780
.....	.....	.....	395, 100	34, 920	.....	.....
....	2, 272, 000	40, 000	5, 970, 000	497, 500	330, 800	15, 200
a	.....	.....	1, 002, 600	83, 550	.....	.....
go	2, 500, 000	45, 000	916, 200	56, 260	142, 000	6, 000
cas	6, 943, 800	122, 250	2, 481, 700	206, 810	642, 800	26, 400
Calientes	6, 622, 500	107, 000	843, 000	70, 250	318, 700	13, 470
is Potosi.....	9, 230, 000	195, 000	3, 400, 000	253, 000	568, 000	20, 590
juato	26, 151, 200	460, 400	4, 729, 200	394, 100	2, 330, 000	98, 450
taro.....	1, 421, 400	30, 000	1, 078, 200	44, 920	339, 300	14, 340
go	2, 976, 300	52, 400	2, 293, 600	143, 350	203, 000	11, 400
o	23, 711, 800	417, 400	4, 262, 200	266, 390	183, 100	9, 030
s	.....	.....	286, 800	17, 920	.....	.....
.....	27, 264, 000	476, 000	4, 316, 200	359, 690	639, 000	36, 000
ila	66, 480, 000	1, 100, 000	801, 000	66, 750	1, 775, 000	75, 000
al District	1, 215, 500	19, 300	300, 000	12, 000	194, 000	10, 930
California.....	441, 600	24, 000	92, 800	7, 730	.....	.....
Total	238, 922, 800	4, 403, 770	54, 416, 400	4, 200, 000	11, 492, 780	470, 940

s where grown.	Beans.		Lentils.		Frijoles.	
	Kilograms.	Value.	Kilograms.	Value.	Kilograms.	Value.
.....	.....	.....	123, 500	$5, 470	2, 751, 900	$116, 280
ahua.....	1, 015, 400	$28, 600	95, 900	4, 860	4, 131, 600	232, 760
ila.....	182, 200	13, 200	153, 900	6, 180	2, 267, 800	111, 800
Leon	.....	.....	.....	.....	4, 613, 500	194, 940
ulipas.....	.....	.....	.....	.....	3, 407, 200	143, 970
Cruz	227, 900	6, 600	.....	.....	11, 950, 000	504, 930
co	.....	.....	.....	.....	2, 199, 500	92, 940
che	.....	.....	.....	.....	74, 700	2, 600
an	.....	.....	.....	.....	6, 732, 200	284, 460
as.....	.....	.....	214, 000	7, 100	2, 561, 000	162, 500
a	461, 900	12, 600	24, 800	1, 750	17, 320, 900	737, 420
ero.....	.....	.....	.....	.....	7, 291, 700	308, 100
acan	768, 200	43, 280	.....	.....	15, 338, 200	648, 090
.....	.....	.....	.....	.....	534, 000	22, 560
....	862, 900	18, 750	.....	.....	23, 878, 300	627, 630
a	163, 600	4, 740	.....	.....	3, 953, 200	167, 040
go	109, 700	5, 560	93, 600	3, 420	4, 495, 500	195, 000
cas.....	377, 400	10, 930	.....	.....	9, 788, 300	413, 590
Calientes	123, 700	5, 370	176, 400	6, 390	1, 983, 700	25, 870
is Potosi.....	431, 600	12, 500	.....	.....	11, 796, 300	506, 880
juato	218, 900	13, 260	161, 900	9, 380	18, 868, 100	805, 690
taro	374, 300	10, 840	154, 200	8, 970	4, 254, 300	479, 760
co.....	173, 0 0	7, 320	153, 300	8, 500	10, 143, 700	428, 610
o	1, 956, 000	56, 120	22, 900	1, 300	16, 485, 700	464, 380
s.....	.....	.....	.....	.....	3, 038, 800	128, 400
.....	2, 307, 000	97, 500	168, 100	10, 900	16, 657, 900	704, 280
ila	5, 842, 900	126, 950	489, 600	17, 730	3, 159, 500	183, 500
al District	125, 0.0	4, 390	.....	.....	113, 000	3, 980
California	.....	.....	.....	.....	146, 100	12, 710
Total	15, 521, 800	478, 510	2, 032, 100	83, 920	210, 838, 600	8, 405, 070

No. 1.—*Agricultural products of Mexico in* 1883—Continued.

States where grown.	Corn.		Potatoes.		Tobacco.	
	Kilograms.	Value.	Kilograms.	Value.	Kilograms.	Value.
Sonora	66, 262, 880	$1, 399, 920	504, 000	$31, 500	.....	.....
Chihuahua	107, 942, 600	1, 520, 310	823, 000	19, 800	.....	.....
Coahuila	56, 362, 000	836, 080	357, 100	21, 400	.....	.....
Nuevo Leon	110, 674, 800	2, 338, 200	.....	.....	.....	.....
Tamaulipas	79, 383, 600	1, 677, 120	421, 400	25, 200	.....	.....
Vera Cruz	286, 817, 200	8, 079, 360	138, 900	8, 030	3, 391, 100	$884, 370
Tabasco	53, 602, 500	1, 121, 040	.....	.....	111, 500	29, 080
Campeche	51, 498, 300	1, 014, 330	.....	.....	199, 300	34, 670
Yucatan	164, 952, 800	4, 646, 560	.....	.....	880, 200	229, 560
Chiapas	42, 950, 000	796, 000	247, 700	15, 380	11, 100	2, 910
Oaxaca	416, 662, 000	8, 802, 700	307, 400	18, 810	217, 600	48, 250
Guerrero	170, 229, 000	3, 063, 800	16, 000	1, 000	70, 700	18, 450
Michoacan	408, 524, 000	8, 630, 790	173, 900	10, 300	40, 200	8, 500
Colima	39, 100, 000	650, 000	.....	.....	10, 100	2, 650
Jalisco	748, 410, 000	15, 811, 400	874, 800	52, 500	2, 422, 300	710, 000
Sinaloa	94, 887, 200	2, 194, 800	301, 800	15, 460	102, 900	26, 850
Durango	112, 038, 000	2, 268, 000	196, 200	11, 700	.....	.....
Zacatecas	224, 941, 800	5, 063, 560	568, 000	35, 500	.....	.....
Aguas Calientes	27, 550, 700	744, 160	217, 800	13, 000	.....	.....
San Luis Potosi	287, 862, 400	6, 081, 600	180. 000	10, 500	.....	.....
Guanajuato	478, 396, 600	10, 107, 000	504, 600	30, 200	.....	.....
Querétaro	103, 547, 000	2, 450, 000	480, 000	28, 800	47, 300	10, 900
Hidalgo	245, 376, 000	3, 456, 000	261, 600	15, 600	.....	.....
Mexico	437, 142, 000	9, 235, 300	549, 300	32, 900	.....	.....
Morelos	89, 232, 000	1, 885, 200	.....	.....	.....	.....
Puebla	400, 093, 500	8, 452, 600	1, 484, 000	64, 500	.....	.....
Tlaxcala	75, 810, 000	1, 602, 000	1, 800, 000	75, 000	.....	.....
Federal District	12, 254, 600	215, 750	650, 300	45, 800	.....	.....
Lower California	522, 400	22, 710	25, 000	1, 500	.....	.....
Total	5, 403, 025, 580	114, 185, 990	10, 602, 800	584, 280	7, 504, 300	2, 006, 130

States where grown.	Wheat.		Vanilla.		Sarsaparilla.	
	Kilograms.	Value.	Kilograms.	Value.	Kilograms.	Value.
Sonora	4, 970, 000	$280, 000	.....	.....	.....	.....
Chihuahua	48, 702, 000	2, 060, 390	.....	.....	.....	.....
Coahuila	20, 290, 000	1, 143, 100	.....	.....	.....	.....
Nuevo Leon	1, 420, 000	80, 000	.....	.....	.....	.....
Tamaulipas	1, 455, 500	82, 000	23, 900	$270, 800	270, 800	$94, 140
Vera Cruz	781, 000	44, 000	28, 900	346, 400	87, 400	31, 400
Tabasco	.....	.....	10, 340	110, 300	49, 170	17, 280
Campeche	.....	.....	.....	.....	.....	.....
Yucatan	.....	.....	.....	.....	.....	.....
Chiapas	.....	.....	.....	.....	27, 500	11, 980
Oaxaca	7, 693, 800	541, 820	4, 325	43, 250	.....	.....
Guerrero	.....	.....	1, 300	13, 000	9, 100	2, 300
Michoacan	8, 079, 800	569, 000	3, 400	34, 000	13, 500	4, 280
Colima	.....	.....	2, 140	21, 400	.....	.....
Jalisco	88, 910, 000	4, 377, 950	2, 340	23, 400	19, 900	5, 210
Sinaloa	2, 414, 000	148, 000	.....	.....	.....	.....
Durango	11, 274, 000	476, 000	.....	.....	.....	.....
Zacatecas	21, 300, 000	1, 200, 000	.....	.....	.....	.....
Aguas Calientes	3, 761, 000	207, 000	.....	.....	.....	.....
San Luis Potosi	12, 780, 000	720, 000	.....	.....	.....	.....
Guanajuato	35, 199, 000	1, 983, 000	.....	.....	.....	.....
Querétaro	7, 696, 400	325, 200	.....	.....	.....	.....
Hidalgo	1, 488, 100	62, 910	.....	.....	9, 800	2, 790
Mexico	11, 650, 900	820, 490	.....	.....	.....	.....
Morelos	113, 600	4, 800	.....	.....	.....	.....
Puebla	23, 675, 000	1, 300, 000	.....	.....	.....	.....
Tlaxcala	22, 265, 600	940, 600	.....	.....	.....	.....
Federal District	2, 392, 700	110, 100	.....	.....	.....	.....
Lower Calirornia	910, 400	59, 330	.....	.....	.....	.....
Total	339, 283, 800	17, 525, 890	76, 645	862, 550	487, 170	169, 460

The States of Yucatan and Campeche produce annually 25,000,000 kilograms of heniquen, valued at $2,125,000. In Oaxaca and Chiapas cochineal is cultivated, and Lower California produces large quantities of orchil.

No. 2.—*Value of the real estate of Mexico*, 1883.

States.	City property.	Rural property.	Total.
Aguas Calientes	$1,456,712	$3,365,418	$4,822,130
Campeche	653,830	2,746,591	3,400,421
Coahuila	1,469,936	3,876,540	5,346,476
Colima	1,465,677	2,789,518	4,255,195
Chiapas	1,356,500	3,622,840	4,979,340
Chihuahua	2,580,300	4,356,584	6,936,884
Durango	4,386,790	9,731,858	14,118,648
Guanajuato	9,876,394	21,273,616	31,150,010
Guerrero	685,397	2,391,538	3,076,935
Hidalgo	2,895,276	12,415,324	15,310,600
Jalisco	14,165,493	22,654,580	36,820,073
Mexico	4,496,963	18,101,955	22,598,918
Michoacan	6,896,402	13,615,022	20,511,424
Morelos	1,260,300	4,200,000	5,460,300
Nuevo Leon	3,294,500	4,612,420	7,906,920
Oaxaca	5,793,011	2,837,578	8,630,589
Puebla	14,380,690	15,458,774	29,839,464
Querétaro	4,121,849	4,370,682	8,492,531
San Luis Potosi	5,149,369	7,681,336	13,130,705
Sinaloa	3,658,446	5,751,890	9,410,336
Sonora	2,350,600	4,872,900	7,223,500
Tabasco	1,622,490	2,968,785	4,591,275
Tamaulipas	2,685,960	2,996,355	5,682,315
Tlaxcala	585,964	5,621,896	6,207,860
Vera Cruz	14,665,884	8,268,790	22,934,674
Yucatan	1,658,795	1,978,988	3,637,783
Zacatecas	5,986,800	10,265,600	16,252,400
Distrito Federal	48,383,928	6,896,754	55,280,682
Lower California	459,326	3,896,200	4,355,526
Total	168,743,582	213,620,832	382,364,414

NOTE.—The foregoing list gives an approximate estimate (very imperfect) of the real estate in Mexico.

No. 3.—*Cotton and wool*

factory, and location.	Name of owner.	What worked.	Motive power.	Value in—	
				Machinery.	Buildings.
District:					
ormiga	Nicolás de Teresa	Cotton.	Water and steam.	$210,000	$90,0
agdalena	Pio Bermejillo	do	do	208,000	150,0
ernando	Manuel Ibañez	do	do	130,000	50,0
ama	Ricardo Sainz	do	do	140,000	80,0
inerva	Suinaga Bros	Wool.	Steam	35,000	25,0
adode Guerrero	B. Arena & Bro	Cotton.	do	45,000	30,
uila	T. R. Cardeña & Co., successors.	Wool.	Water and steam.	36,000	20,
ica de Monnet	F. Monnet & Co	do	do	20,000	10,
Iondo	Isidoro de La Torre	Cotton.	Water	90,000	50,
ldefonso	F. de P. Portilla Sons	Wool.	do	60,000	40,
olmena	Francisco Arzumendi	Cotton.	do	90,000	95
lores	J. H. Robertson & Co	do	do	85,175	8
ozarco	Dolores Rosas	Wool	do	40,000	40
yantla	Concurso de F. Martinez	do	do	3,600	
ago	Pontal, Castella & Co	do	do	15,000	
peranza	Barron, Forbes & Co	do	Water and steam.	25,000	1
l	Antonio Gayol	do	Water	5,000	
aravilla	A. Hope, successors	Cotton.	Water and steam.	82,000	5
ito:					
eforma	Eusebio Gonzalez	do	Water	90,000	
rovidencia	do	do	do	25,000	
es	Alberto Argumedo & Bro	do	do	50,000	
mericana	Portillo & Heyser	do	Steam	25,000	
Potosi:					
nado	J. H. Bahnsen & Co	do	Water and steam.	250,000	3
olino	Bernardo Sáyago	do	do	70,000	
s Martin	Carlos García Ternel	do	do	35,000	
idad y Victoria	Emilio Manuel & Co	do	do	10,000	
stria Jalapeña	Agustin Cerdan	do	do	12,000	
apan	Escandon Bros	do	do	150,000	3
otiamo	Velasco Bros	do	do	200,000	1
ina	Manuel García Ternel	do	do	140,000	
tancia Mexicana	Pedro Berges	do	do	90,000	1
ornía	do	do	do	95,000	
uan de Enmedio	Rosalia P. de Furlong	do	do	95,000	
ia	Manuel Rueda	do	Steam	100,000	
Cruz	Florencio Gavito	do	Water and steam.	60,000	
idencia	Rivero & Medivil	do	do	45,000	
pcion	Bello & Cabrera	do	do	45,000	
uan Amatlan	Benitez Bros	do	Water	30,000	
ficencia	Juan Matienzo	do	Water and steam.	32,000	
alupe	Luis Haro y Tamariz	do	do	38,000	
endencia	Juan Calva y Romero	do	Water	40,000	
ja	Ortiz Borbolla Bros	do	Water and steam.	40,000	
ictoria	A. Villegas & Co	do	Steam	18,000	
me	Santos L. de Letona	Wool.	Water	40,000	
me	Sota & Co	Cotton.	do	12,000	
:					
fanuel	Luis García Ternel	do	do	20,000	
lor	C. Marron Velasco	do	do	25,000	
:					
verancia	Bello, Sons & Co	do	do	15,000	
hia	Melchers, successors	do	Steam	20,000	
nion	Echeguren & Co	do	do	40,000	
loso	Redo & Co	do	Water	20,000	
o:					
les	Rubio Bros	do	Water and steam.	200,000	3
dustria	Antonio Azúnsolo	do	do	15,000	
nantes	José Ma. Sini	do	Water	25,000	
es	Ramos y Amador	do	Water and steam.	12,000	
o del Cristo	Apolonio Hernandez	do	Water	10,000	
osé	Lorilla, Trápaga & Co	do	Water and steam.	90,000	15
	Mowatt & Grandison	do	do	75,000	10

No. 3.—*Cotton and woolen mi—*

ame of factory, and location.	Name of owner.	What worked.	Motive power.	Value in—	
				Machinery.	Buildings.
Jalisco:					
Janja	Barron, Forbes & Co	Cotton.	Water and steam.	$80,000	$120,0
Bellavista	Juan A. de Aguirre	do	do	70,000	80,0
Atemajac	Polomar, Gomez & Co	do	do	60,000	100,0
La Escoba	Fernandez del Vella Bros.	do	Water	80,000	125,0
El Salto	Loweree Bros	do	do	15,000	10,0
La Victoria	F. Rincon Gallardo	do	do	20,000	15,0
La Productora	Liberato Munguia	do	do	2,000	8,0
La Experiencia	F. Martinez Negrete	do	do	16,000	20,0
Santiago	Nicolás Perez & Sons	do	do	20,000	25,0
El Rio	Adolfo Kindt	do	Water and steam.	18,000	23,0
Colima:					
La Armonia	Oetling & Co	do	do	32,000	40,0
La Atrevida	Agustin Schacht	do	do	15,000	20,0
Durango:					
El Tunal	German Stahlknecht	do	do	40,000	18,0
La Constancia	Julio Hildebrandt	do	do	10,000	8,0
Belem	Toribio Bracho	do	do	12,000	20,0
El Salto	do	do	do	18,000	30,0
Providencia	Garza Bros. & Co	do	Water	20,000	35,0
Guadalupe	Refugio Pulido	do	do	6,000	4,0
Constancia	Antonio Valles	do	Water and steam.	5,000	7,0
Michoacan:					
La Paz	Industrial Company	do	do	40,000	80,0
El Paraiso	Ramon Farjas	do	do	25,000	20,0
La Union	Felix Alva & Co	do	do	15,000	16,0
Coahuila:					
El Labrador	Lezin Barousse	do	Water	20,000	30,0
Dávila Hoyos	Desiderio Dávila	do	do	12,000	15,0
Libertad	do	do	Water and steam.	16,000	20,0
La Aurora	Francisco Arizpe y Ramos	do	do	25,000	18,0
La Hibernia	Agustin Bosque	do	do	10,000	15,0
La Esmeralda	Juan E. O'Sullivan	do	do	13,000	14,0
El Rosario	Madero & Co	do	do	35,000	25,0
Nuevo Leon:					
El Porvenir	Antonio L. Rodriguez	do	do	15,000	20,0
La Fama	Manuel Septilveda	do	do	30,000	40,0
La Leona	Roberto Laso	do	Water	16,000	25,0
Sonora:					
La Industria Sonorense.	Celedonio Ortiz	do	do	20,000	22,0
Yucatan:					
La Constancia	J. A. Urcelay	do	do	12,000	18
Zacatecas:					
La Zacatecana	J. M. Garcia Elias	do	Water and steam.	10,000	1
Aguas Calientes:					
San Ignacio	J. Cornu	do	Water	12,000	1
Puebla:					
San José	Alejandro Quijano	do	Water and steam.	50,000	1
Asuncion	Manuel Rueda	do	do	55,000	
Concepcion	Benitez Bros	do	Steam	20,000	
Total				4,690,775	4,

in *Mexico*—Continued.

Total value.	Spindles.	Looms.	Annual consumption.		Cost of manufacture.		Hands employed.				Monthly product.			
			Cotton.	Wool.	Cotton.	Wool.	Men.	Women.	Children.	Total.	Candle wicking.	Yarn.	Cloth.	Prints.
	No.	*No.*	*Cwt.*	*Qrs.*	*Cwt.*	*Qrs.*					*Kilos.*	*Kilos.*	*Pcs.*	*Pcs.*
$200,000	6,000	120	8,000	.....	$16 00	.....	180	.....	180	360	.....	20,000	5,000	.....
150,000	4,200	110	3,600	.....	18 00	.....	100	25	90	215	.....	.....	2,000	.....
180,000	5,600	130	3,500	.....	18 00	.....	120	30	45	195	.....	.....	2,500	.....
205,000	6,000	140	4,000	.....	18 00	.....	120	.....	80	200	4,800	47,880	3,000	.....
25,000	400	130	3,500	.....	18 00	.....	150	.....	30	180	.....	17,152	2,000	.....
35,000	600	35	600	.....	18 00	.....	20	.....	15	35	.....	14,352	.....	.....
10,000	50	10	100	.....	18 00	.....	25	.....	40	45	4,800	.....	1,000	.....
36,000	700	40	680	.....	18 00	.....	12	.....	6	18	.....	14,352	.....	.....
45,000	650	35	450	.....	18 00	.....	30	.....	20	50	.....	.....	1,000	.....
41,000	600	30	480	.....	18 00	.....	25	30	20	75	.....	4,800	2,000	.....
72,000	2,500	80	4,000	.....	18 00	.....	30	20	18	68	.....	28,000	1,000	.....
35,000	1,250	90	800	.....	16 00	.....	80	.....	25	105	.....	.....	3,000	.....
58,000	2,000	100	1,500	.....	17 00	.....	25	.....	.....	25	.....	10,000	1,000	.....
18,000	260	30	250	.....	16 00	.....	80	.....	26	106	.....	.....	4,000	.....
32,000	600	35	400	.....	16 00	.....	20	.....	12	32	.....	.....	3,000	.....
48,000	900	45	900	.....	17 00	.....	25	.....	12	37	.....	.....	1,000	.....
55,000	1,000	50	800	.....	17 00	.....	40	.....	18	58	.....	10,000	1,000	3,900
10,000	150	25	150	.....	17 00	.....	45	.....	20	65	.....	.....	1,500	.....
12,000	120	20	200	.....	17 00	.....	15	10	10	35	.....	.....	1,000	.....
120,000	5,000	100	5,000	.....	17 00	.....	16	.....	12	28	.....	.....	3,000	.....
45,000	1,400	30	1,800	.....	18 00	.....	80	.....	25	105	.....	.....	5,000	.....
31,000	800	45	2,500	.....	18 00	.....	25	.....	12	37	.....	.....	1,500	.....
50,000	1,200	25	1,600	.....	18 00	.....	50	.....	10	60	.....	.....	3,500	.....
27,000	700	20	600	.....	16 00	.....	20	.....	15	35	.....	.....	1,500	.....
36,000	800	30	800	.....	16 00	.....	10	.....	12	22	.....	.....	1,000	.....
43,000	1,000	40	1,200	.....	16 00	.....	20	.....	16	36	.....	.....	1,000	.....
25,000	750	25	800	.....	16 00	.....	25	.....	12	37	.....	.....	1,500	.....
27,000	600	20	850	.....	16 00	.....	20	.....	12	32	.....	.....	1,800	.....
60,000	1,500	50	1,500	.....	16 00	.....	18	.....	16	34	.....	.....	1,000	.....
35,000	800	35	760	.....	16 00	.....	40	.....	18	58	.....	.....	2,000	.....
70,000	1,300	40	1,400	.....	18 00	.....	20	.....	16	36	.....	.....	1,000	.....
41,000	1,000	25	1,100	.....	18 00	.....	35	.....	20	55	.....	.....	1,500	.....
42,000	900	30	1,400	.....	18 00	.....	25	.....	16	41	.....	.....	1,000	.....
27,000	700	20	650	.....	20 00	.....	30	.....	18	48	.....	.....	1,300	.....
18,000	500	15	400	.....	20 00	.....	20	.....	12	32	.....	.....	500	.....
28,000	750	25	700	.....	20 00	.....	30	.....	16	46	.....	.....	1,000	.....
110,000	2,800	62	1,200	.....	22 00	.....	80	.....	15	95	.....	1,450	2,000	.....
70,000	2,500	100	2,200	.....	22 00	.....	60	.....	24	84	.....	.....	3,200	.....
35,000	3,000	230	3,200	.....	22 00	.....	140	.....	10	150	450	.....	3,500	.....
9,507,775	258,458	9,214	258,962	58,200			7,680	2,111	2,555	12,346	33,614	239,251	256,484	22,880

No. 4.—*Steam communication.*

A.—Subsidized steamship lines.

(1.) *Line of steamers of Alexandre & Sons.*—Between Vera Cruz and New York: Weekly trips, touching at Havana and Progreso, every other steamer touching at Campeche and Frontera, as well as at the ports first named. Between Vera Cruz and New Orleans: Trips every twenty days, touching at Tuxpan, Tampico, and Bagdad.

(2.) *Morgan Company of Railroad and Steamships for Louisiana and Texas.*—Between Vera Cruz and Morgan City: Bi-weekly trips, touching at Galveston.

(3.) *Mexican Transatlantic Steamship Company.*—Between Vera Cruz and Liverpool: Monthly trip, leaving Liverpool and touching at Havre, Santander, Havana, and Progreso. On the return trip steamers touch regularly at Progreso and at the other ports or not at the will of the company, which will soon, however, fix regular stations.

(4.) *California Steamship Company.*—Between Mazatlan and San Francisco, Cal.: Monthly trips, touching, both going and coming, at La Paz, Guaymas, Cape St. Lucas, and Magdalena Bay.

(5.) *Pacific Mail Steamers Company.*—Two round trips a month made by the line called "Direct between San Francisco, Cal., and Panama," whose steamers touch, both going and coming, at Mazatlan and Acapulco, and at Mazanillo and San Blas, going and coming, once a month at least.

(6.) The same company, with a line styled the Oriental Line, makes one round trip a month, steamers touching, both going and coming, at Acapulco, Salina Cruz, and San Benito.

B.—Unsubsidized lines.

(1.) *General Transatlantic Company* (*French Mail Steamers*).—Between Vera Cruz and Saint Nazaire: Monthly trips, touching at Havana, St. Thomas, and Santander. Between Vera Cruz, Bordeaux, and Havre: Monthly trips, touching at Havana, Puerto Principe, Cape Haytien, Puerto Plata, Mayaguez, St. Thomas, Corunna, Bordeaux, Pouillac, and Havre.

(2.) *English Royal Mail Packet Line.*—Between Vera Cruz and Southampton: Monthly trip, touching at Havana, Plymouth, Cherbourg, Bremerhaven, Hamburg, Antwerp, and intermediate points.

(3.) *German Imperial Line.*—Between Vera Cruz, Havre, and Hamburg: Monthly trips, touching at Tampico, Progreso, Puerto Principe, Gonaives, and Cape Haytien.

(4.) *Steamers of the Marquis del Campo.*—Between Vera Cruz, Santander, and Bordeaux: Monthly trips, touching at Frontera, Progreso, Havana, Puerto Rico, Vigo, Corunna, Cadiz, Barcelona, and Marseilles, connecting at Havana and Puerto Rico with the Colon and Puerto Rico lines.

(5.) *Spanish Transatlantic Company* (*formerly owned by Antonio Lopez & Co.*).—Between Vera Cruz and Santander: Monthly trips, stopping at Havana and Corunna.

No. 5.—*Military organization of Mexico.*

The army of the republic is composed of eleven divisions, posted in eleven military districts, which are (1) the States of Sonora, Sinaloa, and the territory of Lower California; (2) the States of Chihuahua and Durango; (3) the States of Coahuila and Nuevo Leon; (4) the State of Tamaulipas; (5) the States of Jalisco and Colima, and the military district of Tepic; (6) the States of Aguas Calientes, Zacatecas, and San Luis Potosi; (7) the States of Michoacan, Guanajuato, and Querétaro; (8) the federal districts and the States of Mexico Guerrero, Hidalgo, and Morelos; (9) the States of Puebla, Vera Cruz, and Tlaxcala; (10) States of Chiapas and Oaxaca; (11) States of Tabasco, Campeche, and Yucatan.

The War Department is divided, for facilitating its administration, as follows: The secretary's office (seven sections, including that of the archives); Department of the Special Corps of the Staff, embracing the sections of lithography, photography, printing, and field telegraphs and mails; Department of Artillery; Department of Engineers; Department of Infantry and Cavalry; Medical Department; Department of the Marine.

The Staff of the Army is composed of 5 generals of division in active service, 22 generals of brigade in active service, 5 generals of division in reserve, 16 generals of brigade in reserve, 4 generals of division retired, 12 generals of brigade retired, 8 military assessors.

The Special Staff Corps is composed of 1 general or colonel, chief of the corps, 5 colonels, 10 lieutenant-colonels, 10 majors, 22 first captains, 22 second captains, 48 cadets of the Military College.

The Engineer Corps is composed of 1 general, 4 colonels, 4 lieutenant-colonels, 4 majors, 7 first captains, 7 second captains, 6 lieutenants, 1 sublieutenant, 4 powder

rds, and besides the sapper battalion and the military school belong to the corps. latter has one general-director, 1 colonel-subdirector, 1 secretary, 1 adjutant-lieu- ant, 1 surgeon, 1 clerk of the subdirectory, 2 companies of cadets, each composed captain, 2 lieutenants, 1 first sergeant, 4 second sergeants, 10 corporals, 85 cadets, 2 buglers (soldiers of the line). The second has besides 30 horses for cavalry in- ction. The professors and masters number 39, of which 7 are taken from the field line officers of the college. The studies occupy the space of seven years, divided three periods. The first period is used for the study of everything necessary for ntry and cavalry officers, and the cadets who finish the two last periods are de- ed to the corps of engineers, artillery, and the special staff.

he Artillery Corps is composed of 1 department director in the war department, 1 ecting staff, 1 general ammunition office, 4 battalions of four companies each, 1 bat- on of two companies, 1 squadron of the train, 5 stationary companies in the ports, tablishments of construction which are: the store-houses and gun-carriage factory, small-arm factory, the cannon foundry, and the powder factory. A battalion of llery consists of its staff, three companies of field artillery and one of mountain. battalion is instructed both in field and mountain tactics. The artillery troops war footing can serve 336 guns. The system is in the latest French style; the s are of steel and are breech-loaders.

he Military Administration Corps is composed of 1 commissary-general of war and ine, 1 sub commissary, 12 first officers, 50 second officers, 40 third officers, 71 fourth ers, 4 first paymasters, and 4 second paymasters of ships of the navy.

he Military Police is composed of 1 colonel or lieutenant-colonel, 1 first captain, 1 nd captain, 3 lieutenants, 3 alféreces, 1 first sergeant, 6 second sergeants, 12 cor- als, 2 trumpeters, 129 police, 150 horses, and 4 pack mules. This company remains ted in time of peace, and in war, after having been augmented, it is divided into quads, which are attached to as many divisions.

fantry.—For the carrying on of the business referring to this arm, there is a de- tment in the office of the secretary of war. The infantry force consists of 20 bat- ons, with three-fourths of their force on a war footing, 20 skeleton battalions h one-fourth of their force on a war footing, 10 battalions of auxiliaries with half ir force on a war footing. On the war footing all have 3 field officers, 34 line offi- s, and 934 soldiers. The numeration of these battalions and skeletons runs from to 50.

avalry.—For the carrying on of the business relative to this arm there is a depart- nt in the office of the secretary of war. The cavalry force consists of 10 regiments squadrons each, and ten skeleton regiments. The regiments have in time of war ld officers, 34 line officers, and 633 soldiers, and in time of peace three-fourths of force. The skeletons in time of peace have one-third of the force.

edical Corps.—The medical corps transacts its business by means of a department he war office. Its *personnel* is composed of 5 colonels, 12 lieutenant-colonels, 50 ors, 8 first captains, 8 second captains, and 10 aspirant lieutenants; all of these surgeons. Nurses, 14 first sergeants (watchers), 14 second sergeants (chief nurses), corporals (first-class nurses), 60 soldiers (second-class nurses), apothecaries; 1 or, 4 first captains, 4 second captains, as administrators of hospitals; 1 major, 4 captains, 4 second captains, as common administrators; 8 entrance commissaries, paymasters. Veterinaries: 1 colonel, 1 lieutenant-colonel, 1 major, 6 first cap- s, 6 second captains, 6 aspirant lieutenants, ambulance train; 1 sublieutenant of ntry, 5 second sergeants (overseers), 18 muleteers, 40 soldiers, 80 mules.

ational Invalid Corps at present consists of 1 general, 1 field officer, 17 line officers, 198 soldiers.

he National Palace is under the military government of 1 general, 1 first captain, utenant.

ilitary Commandancies exist in Vera Cruz, Ulua, Federal District, Acapulco, Cam- he, Tepic, Tampico.

ilitary Colonies.—Their force is composed of 2 battalions in Yucatan, 2 companies Campeche, 1 company in Lower California, 2 squadrons in Chihuahua, 1 squadron Sonora, 1 squadron in Durango, and 1 squadron in Coahuila. For the northern ntier there are two subinspections, and one for the States of Yucatan and Cam- he. These troops have their special organization and service.

isposables Depot.—With the field and line officers of infantry and cavalry of the y of the line a disposable depot has been formed, and which is organized into leton corps of officers (both field and line), according to the arm to which they ong.

ar Marine.—This department has its business transacted in a special department in war office. Gulf squadron: steamer Libertad, steamer Independencia, three steam nches for the coast guards of Campeche, Tampico, and Progreso; sailing transport on. Pacific squadron: steamers Mexico, Democrata, Resguardo, and Juarez. There two principal commandancies of the navy, one in Vera Cruz, the other in Mazatlan. re are port captaincies at Vera Cruz, Tampico, Isla del Carmen, Campeche, Ta-

basco, Coatzacoalcos, Tuxpan, Progreso, Alvarado y Matamoros, Mazatlan, Acapulco, San Blas, Guaymas, La Paz, Salina Cruz, Manzanillo, Soconusco, Tonalá, Puerto Angel, Libertad, Magdalena, Islas Marias, Isla de Guadalupe. There are two naval academies, one in Campeche, the other in Mazatlan. Two naval arsenals are being built, one on the coast of the Gulf of Mexico, and the other on that of the Pacific; the first at Lerma, near Campeche, and the second at Acapulco (State of Guerrero).

It is claimed that since the independence the Mexican army has never been so well armed, equipped, and organized, nor in so thorough a state of efficiency, as at present.

THE MEXICAN ARMY.—STATEMENT OF FORCES, 1883.

PEACE FOOTING.

Organization.	Major-generals.	Brigadier-generals.	Field officers.	Assessors.	Line officers.	Officers of the administrative corps.	Store-house and powder guards.	Professors of the military academy.	Artificers of the artillery.	Cadets of the military academy.	Rank and file.	Horses.	Pack and draft animals.
War department	1	1	7	....	11	....	....	....	....	....	.....	.....	.....
Staff of the army	10	38	....	8	.....	....	....	....	....	....	.....	.....	.....
Special staff corps	....	1	25	....	94	....	....	....	....	....	.....	.....	.....
Engineer corps	....	1	12	....	25	....	....	....	....	....	.....	.....	.....
Military academy	1	....	1	....	24	....	....	39	....	200	4	30	.....
Battalion of sappers	....	....	3	....	34	....	....	....	....	....	727	.....	32
Department and subinspections of artillery	....	1	4	....	.....	....	4	....	....	....	.....	.....	.....
Ammunition department	....	....	1	....	3	....	10	....	9	....	.....	.....	.....
Five battalions of artillery	....	....	15	....	183	....	....	....	....	....	1,820	253	1,420
Five stationary companies of artillery	....	....	..	....	22	....	5	....	7	....	300	.....	.....
Squadron of train guards	....	....	1	....	10	....	....	....	....	....	109	39	400
Four construction works	....	....	4	....	16	....	26	....	267	....	.....	.....	.....
Corps of military administration	....	....	13	....	.....	147	....	....	....	....	.....	.....	.....
Military police	....	....	1	....	8	....	....	....	....	....	150	150	4
Department of infantry and cavalry	....	1	5	....	13	....	....	....	....	....	.....	.....	.....
Thirty battalions and twenty skeleton battalions	....	....	180	....	1,280	....	....	....	....	....	24,000	.....	960
Ten regiments and ten skeleton regiments	....	....	60	....	470	....	....	....	....	....	6,470	6,000	320
Medical corps	....	....	72	....	69	....	....	....	....	....	184	.....	80
National invalid corps	....	1	1	....	17	....	....	....	....	....	198	.....	.....
Government of the national palace	....	1	....	....	2	....	....	....	....	....	.....	.....	.....
Military commandancies and pay departments	1	1	14	1	31	....	....	....	....	....	16	.....	.....
Military colonies—infantry	....	....	6	....	40	2	....	....	....	....	695	.....	.....
Military colonies—cavalry	....	....	1	....	33	1	....	....	....	....	650	650	40
Available depot	....	....	120	....	320	....	....	....	....	....	.....	.....	.....
Reserves of the army which are the national guards of the States. 1st contingent	....	....	*80	....	*340	....	....	....	....	....	10,000	.....	.....
2d contingent	....	....	....	....	.....	....	....	....	....	....	.....	.....	.....
3d contingent	....	....	....	....	.....	....	....	....	....	....	.....	.....	.....
Total	13	46	576	9	3,045	150	45	39	283	200	45,323	7,212	3,256

WAR FOOTING.

War department	1	1	7	....	11	....	....	....	....	....	.....	.....	.....
Staff of the army	10	38	....	8	.....	....	....	....	....	....	.....	.....	.....
Special staff corps	....	1	25	....	94	....	....	....	....	....	.....	.....	.....
Engineer corps	....	1	12	....	25	....	....	....	....	....	.....	.....	.....
Military academy	1	....	1	....	24	....	....	39	....	200	4	30	.....
Battalion of sappers	....	....	3	....	34	....	....	....	....	....	933	.....	32
Department and subinspections of artillery	....	1	4	....	.....	....	4	....	....	....	.....	.....	.....
Ammunition department	....	....	1	....	3	....	10	....	9	....	.....	.....	.....
Five battalions of artillery	....	....	15	....	183	....	....	....	....	....	3,115	253	1,320
Five stationary companies of artillery	....	....	....	....	22	....	5	....	7	....	535	.....	.....
Squadron of train guards	....	....	1	....	10	....	....	....	....	....	200	39	1,200

THE MEXICAN ARMY.—STATEMENT OF FORCES, 1883—Continued.

WAR FOOTING—Continued.

Organization.	Major-generals.	Brigadier-generals.	Field officers.	Assessors.	Line officers.	Officers of the administrative corps.	Store-house and powder guards.	Professors of the military academy.	Artificers of the artillery.	Cadets of the military academy.	Rank and file.	Horses.	Pack and draft animals.
Four construction works	....	....	4	...	16	...	26	....	500	....	.....	.....	.....
Corps of military administration	..	....	13	...	.....	170	..	....	....	....	.....	.....	.....
Military police	....	....	1	....	12	....	....	....	....	....	250	250	10
Department of infantry and cavalry	..	1	5	....	13	....	....	....	....	....	.....	.....	.....
Thirty battalions and twenty skeleton battalions	....	....	150	....	1,700	....	....	....	....	....	46,700	.....	1,600
Ten regiments and ten skeleton regiments	....	....	60	....	680	...	....	....	....	....	12,740	12,740	640
Medical corps	....	....	72	....	69	....	....	....	....	....	400	.....	310
National invalid corps	....	1	1	...	17	...	....	....	....	....	.....	.....	.....
Government of the national palace	....	1	1	....	2	...	....	....	....	....	198	.....	.....
Military commandancies and pay departments	1	1	14	1	31	....	....	....	....	....	16	.....	.....
Military colonies—infantry	..	..	6	....	80	2	....	....	....	....	1,390	.....	50
Military colonies—cavalry	....	....	1	....	52	1	....	....	....	....	1,300	1,300	80
Available depot	....	....	....	....	.....	....	....	....	....	....	.....	.....	.....
Reserves of the army which are the national guards of the States. 1st contingent	....	....	....	....	.....	....	....	....	....	....	*24,000	*1,500	.....
2d contingent	....	....	....	....	.....	....	....	....	....	....	*30,000	.....	.....
3d contingent	..	....	....	....	.....	....	....	....	....	....	*40,000	*10,000	.....
Total	13	46	396	9	3,078	173	45	39	516	200	161,781	26,112	7,256

* Proper quotas of field and line officers.

Total fighting force:	
Infantry	131,523
Cavalry	25,790
Artillery	3,650
Total fighting men	160,963

No. 6.—*Mexican beverages.*

Creole brandy of San Luis de la Paz: Made of grape, water, and sugar, distilled.

Fruit liquor: Made of peach, pear, and apple, with the necessary water; the infusion when distilled makes a liquor similar to brandy made from grapes, with which it is mixed.

Brandy of wild grapes: Wild grapes are mixed with brown sugar, made to ferment, and then distilled, adding the root called sheshekay (xixique).

Hydromel: Juice of the agave, pure and unfermented.

Bingarróte o Binguí: Some old heads of agaves are heated underground, and roughly ground on a stone; they are made to ferment in a pulque vessel and then subjected to distillation. The contents of the first jar are called Binguí and the rest Bingarrote.

Beer: A decoction of barley, lemon, tamarinds, or wheat and sugar. Also made of pineapple peel, cloves, cumin, coriander, and sugar, all fermented. It is also made of any leguminous matter, fermented, and adding hops to give it flavor.

Charangua: Old pulque with sirup and red capsicum, stowed, heated, and fermented in earthen vessels.

Charape: Pulque with white sugar, cinnamon, cloves, and anise. In twelve hours the mixture is ready for usage.

Chicha: Barley water with pineapple and ground brown maize is left for four days until sour. Then sugar, cloves, and cinnamon is added and the mixture is left to ferment four days.

Chilocle: Broad capsicum, pasote, garlic, and some salt are put into pulque, which thus becomes as strong as brandy.

Chinguirito: A mixture of water and brown honey is put into hides, well sheltered, and then heated, which makes it ferment quickly. Then it is passed into a still. The first liquor obtained is as strong as the one known as "Holland"; the following are of higher grades up to "Refino."

Chiquito: Water and prickly pear fermented.

Chuánuco: Some sweet fruit, such as plum, peach, apple, is ground, and adding water with sugar it is made to ferment until strong and then strained.

Copalotle: A hot and noxious beverage. It is made from the seed of the Peru tree while red, and fermented for one or two days with pulque tlachique.

Coyote: Made of inferior pulque, brown honey, and timbre wood, and left in infusion. This drink is detrimental to health.

Excommunion: Another name for mescal, because some bishop imposed excommunion on those taking it, which caused an enormous consumption of the article.

Guarapo: Made of sugar cane or corn stalks, pulque, and brown honey with maize, fermented during four days.

Manteqnilla: Pulque with brandy and sugar.

Mescal: Some heads of agaves are broiled, pounded, and put into water, then fermented and distilled.

Common mescal: Extracted by distillation from a mixture of water and a small broiled agave which has previously been fermented in skins, adding white pulque and timbre wood.

Weak or tail mescal: The same liquid as the foregoing, but the second extraction.

Mescal de pulque: Some pulque tlachique and molasses (miel de piloncillo) are made to ferment in skins and then distilled.

Tail Rescado (mescal resacado de cola): Drawn from the tail mescal by reducing it to one-fourth.

Common Resacado: Drawn from common mescal, reducing it to one-fourth.

Mistela: Common mescal redistilled with anise sirup.

Nochocle: Juice of the prickly pear, strong pulque, and water, fermented.

Jobo: Juice of jobo (a wild plum) and water, fermented.

Coct's eye: White pulque mixed with water and brown honey, then boiled with pepper, anise, and capsicum and left to ferment for twenty-four hours.

Ostoche: Juice of corn stalks fermented with water.

Oztotzi: Juice of corn stalks, mixed with pulque, or instead of the latter with brown sugar or honey, adding timbre wood to make it strong, which also gives it a greenish color.

Peyote: Made from a plant called "vinagrilla," which is pounded in mortars and fermented with water, adding one or two leaves of tobacco.

Hoarse chicken: White pulque with blackberries, capulins, pepper and sugar.

Pulque punch: Lemonade mixed with pulque, liquor, cloves, and nutmeg.

Pozole: A nourishing and excellent refreshment, welcomed by the traveler. Maize is heated until it cracks, then ground on a stone and left in water as long as three or four days, until sour.

Almond pulque: Pulque with sugar and ground sweet almonds.

Pulque de atole: Pulque with acid atole, strained and sweetened.

Pulque de chirimoya: The hydromel of the domestic agaves, cut at the age of three or four years, is put into skins containing the mother (old pulque), and the shaking while being transported gives it flavor and strength.

Colonche: The strained juice of the prickly pear, fermented in earthern vessels. A healthy, cool, and refreshing drink.

Coyote: The same mixed with pulque.

Colorado: Colonche with timbre bark.

Coyol: Juice extracted from the coyol palm.

Peach pulque: Peeled peaches are put into a kettle containing some water and heated until the liquid is reduced to one-half, and colored. Then the peaches are taken out and the liquid when cold is added to the pulque, sweetened with sugar.

Pulque de jobo: Pulque with jobos and sugar, strained.

Pulque tlachique: Made of tender agaves, cut before ripe. It is slavering and thick.

Quanchan: Pulque tlachique with the fruit of the Peru tree, deprived of its peel and left in infusion for four or six days.

Bonebreaker: Juice of corn stalks with toasted maize and the ripe seed of the Peru tree. The infusion is left to ferment for two or three days.

Revoltijo: Juice of the prickly pear with peel of same or a root called pulque root. After it has fermented mescal is added.

Rosoli: Liquor composed of water, rice, toasted chick-pea, barley, ground cinnamon, and peeled citron; left in infusion for two weeks and then distilled.

Rabbit-blood: White puque with prickly pear, strained and sweetened.

Sendecho: Yellow maize is put into water, then dried, broken, again watered, and left for a night; then ground and boiled all day, straining it while boiling and adding a little of striped sugar.

Cider: The juice of the apple or bergamot pear; extracted by means of a press; is left to ferment for two or three months until clear.

Sisique: Rum distilled from tepache.

a: Brown maize, toasted and ground, is put into infusion for two days with nd yellow sugar.
i: Agave worms, toasted and ground, are put into pulque, giving it a mul- olor.
o: Infusion of timbre bark in juice of the prickly pear, performed under- for a short time.
he: The juice of the sugar cane, fermented, adding a bitter root. Also, white with molasses, boiled with anise. The longer it boils the stronger is the

he of dried plums: Plums are put into water and left in infusion for three or ys until well soaked; they will fall to pieces by handling them in the water, s then strained.
on tepache: The dregs of the pulque tlachique are mixed with water, adding honey, pepper, and a maize leaf; it ferments soon.
he de jobo: Jobo and brown sugar are made to ferment in earthen vessels, the root of the sheshekay (she-she-kay) tree.
he de timbiriche: Made of this fruit, which is mashed and put into water to , then strained.
ique: Made of ripe agaves, with the foot or mother of the fine pulque.
ce: Pulque fermented with the fruit of the Peru tree.
: Liquor drawn from the cocoa palm.
riche: Fermented juice of this fruit.
wine: Corn stalks are pounded in a mortar and the juice when fermented is ed.
l de Guadalajara: Water, honey, and agave heads are made to ferment in skins n distilled.
a wine: The fruit of the acacia (mesquite), ground and squeezed, is put into nd the infusion distilled.
palm wine: The dates of wild palms, broiled under ground in an excavation und, are put into water. The infusion after it has fermented is strained.
ado wine: Pineapples or trunks of agaves, deprived of their leaves, are cooked ven for two weeks, then mashed and put into pulque kept in skins, adding root and leaving them in infusion for two days. The liquid is then distilled, ng ordinary liquor, which if refined in the same still makes a good liquor as aforesaid.
wine: Bran is put into water with yellow sugar or honey and the infusion emented is distilled.
é wine: The juice of the leaves of a narrow agave, growing wild, is boiled acia wood to strengthen it.
wine: The strained juice of the prickly pear, obtained by pressing the fruit, led, then barreled with the mother of the must from the same fruit, then fer- and racked.
dua or citron punch: Cold water, sugar, some drops of lemon or orange juice, with citron.
umbia: Barley toasted and pounded is put into water and left to ferment for four days, then sweetened with honey or brown sugar.
le: Tepache of sugar cane is made to ferment in earthen vessels, adding some ng herbs.

.—*Translation of a law for the encouragement of the Mexican mercantile marine.*

TREASURY DEPARTMENT, SECTION 1.

President of the Republic has decreed the following:

L GONZALES, Constitutional President of the United States of Mexico, to the people thereof, greeting:

the Congress of the Union has enacted the following:

CLE 1. All merchandise imported into the republic in national steamships or vessels shall be entitled to a reduction on the usual import-duties as follows:
l foreign merchandise carried in national vessels and entered at any of the the republic (excepting those designated in the two following paragraphs) entitled to a reduction of two per cent.
erchandise shipped in Asiatic ports destined for the Mexican Pacific ports entitled to a reduction of four per cent., whether carried in irregular or reg- es.

III. Merchandise from the same ports with the same destination, carried by the regular steamship lines making periodical trips, shall be entitled to a reduction of eight per cent.

IV. It is to be understood that the merchandise claiming the foregoing reductions shall be Asiatic products or manufactures, otherwise only the reduction of two per cent. (as stated in paragraph I of this article) can be allowed.

V. All merchandise not entered for use within the republic, but simply passing in transit on any of the international or interoceanic lines from one Mexican port to another or to any frontier custom-house, shall be entitled to a reduction of fifty per cent. on the usual transit duties. Merchandise crossing the Isthmus of Tehuantepec is excepted from this rule.

ART. 2. That the foregoing privileges may be available the national character of the vessel must be determined according to the laws of the country, or by a decision of the secretary of the navy, under the following regulations, to wit:

I. That the owners or companies owning the vessels shall reside within the territory of the republic, and that at least four-fifths of the capital required for building the vessels shall have been subscribed by residents in Mexican territory.

II. That the said owners or companies shall bind themselves to submit all questions or differences which may arise in regard to their rights or obligations under this law, to Mexican tribunals, to be by them definitely and conclusively decided, expressly renouncing all or any other recourse or appeal whatsoever.

III. That the said owners or companies shall consent to a periodical inspection of their vessels, and that the secretary of the navy shall have the right at any time to order such inspection for the purpose of ascertaining whether or not the said vessels are seaworthy, and he shall have the further right of ordering the temporary withdrawal of said vessels from service if, in his opinion, they may be in need of repairs.

IV. That the said owners or companies shall apply to the secretary of the treasury for a special patent setting forth that the vessel has fulfilled all the requirements of this law and is entitled to the privileges thereby conceded. This patent shall only be issued upon a corresponding report from the secretary of the navy, showing that the vessel in question has complied with all the legal requirements. This patent shall bear a revenue stamp of the value of twenty dollars, and the date from which the vessel shall be entitled to the privileges aforesaid, and will exhibit the text of this law on its reverse.

ART. 3. In addition to the advantages secured by this law to national vessels which are built in or out of the republic, vessels of more than one hundred tons burden which are built within the republic shall be entitled to a premium of ten dollars per ton, which is payable once only, on the launching of the vessel, in accordance with the law of November 28, 1868.

ART. 4. If at any future time Congress, in the exercise of its authority, should see fit to repeal this law, vessels which have obtained the foregoing patent shall not be affected thereby, but shall continue to enjoy the privileges thus secured for the time named in the following paragraph.

ART. 5. This law shall continue in force for twenty years, reckoning from the date of its publication.

FRANCISCO I. BERMUDEZ,
Deputy President.
GUILLERMO PALOMINO,
Senator President.
AUGUSTIN RIVERA Y RIO,
Deputy Secretary.
ENRIQUE MARIA RUBIO,
Senator Secretary.

We hereby order that the foregoing be printed, published, circulated, and its requisitions be duly complied with.

Given at the executive palace of the Union at the city of Mexico, on the 12th day of December, 1883.

Manuel Gonzales to the secretary of the treasury and public credit, the citizen Jesus Fuentes y Muniz, this is communicated for your information and other purposes thereto pertaining.

Mexico, December 13, 1883.

JESUS FUENTES Y MUNIZ.

No. 8.—*List of occupations in the city of Mexico.*

A.—MANUFACTORIES.

.....	100	Cassimere factories	1
.....	27	Silk factories	1
.....	42	Vinegar factories.....	1
.....	7	Soap factories	19
s.....	7	Macaroni factories.....	6
.....	25	Starch factories.....	5
.....	8	Porcelain factories	2
.....	7	Photographers	11
.....	27	Galloon makers.....	4
.....	9	Engravers	5
.....	6	Printing houses.....	34
.....	8	Lithography and wood engraving...	18
.....	12	Flour mills	1
.....	6	Oil mills	7
.....	15	Chocolate factories	11
es.....	19	Milliners	10
.....	8	Hair dressers.....	14
factories.....	18	Trimming makers	3
.....	5	Silversmiths.....	14
actories	3	Plumbers	5
.....	4	Tailor shops.....	74
ctories.....	4	Hatters	19
ories.....	1	Smiths.....	41
ories.....	1	Saddle and harness makers	7
.....	1	Upholsterers	7
actories	4	Shoemakers	42

B.—MERCANTILE HOUSES.

rn shops	60	Furniture stores.....	22
s.....	54	Armories	5
.....	40	Banks.....	4
.....	8	Pianos	4
.....	16	Jewelers	22
.....	36	Cordage.....	4
.....	4	Toy stores.....	6
.....	4	Nurseries	4
arcoal yards	5	Book stores	16
amp stores.....	3	Mercery and hardware.....	33
ng materials.....	11	Inns	16
.....	4	Ice-cream saloons.....	7
.....	2	Cow yards	35
il stores	10	Livery stables.....	8
.....	3	Perfumery	4
ned hides.....	9	Pulque shops	777
s.....	4	Musical goods	5
.....	25	Rebozos	11
ses	31	Merchant tailors.....	18
.....	12	Thread and needle stores.....	26
.....	13	Tobacco stores.....	23
.....	3	Paints and dyestuffs	27
es	2	Retail groceries	136
.....	3	Pork	17
ries	22	Bath-houses	41
at wholesale.....	12	Barber shops	37
wholesale.....	38	Horse baths	4
gists.....	10	Physicians	183

oregoing is a list of the trades, manufactures, commercial, and busi-s which are carried on in the city of Mexico. The numbers given are stated, as I was unable to procure exact returns.

DAVID H. STROTHER,
Consul-General.

AMERICAN TRADE IN CIUDAD BOLIVAR.

REPORT BY CONSUL DALTON ON AMERICAN TRADE IN CIUDAD BOLIVAR, AND ON THE GUAYANA GOLD MINES.

I am happy to inform you that the imports from the United States are on the increase, though at a slow rate, owing to the great difficulties presented to commerce in general by the high revenue tariff on both imports and exports.

An average American assorted cargo, consisting principally of machinery, provisions, &c., pays about 35 per cent. duty. American flour pays a duty of $5.30 gold per barrel; leaf tobacco, $1.08 per kilogram; boxes of 10 gallons of kerosene, $2.05 each; rough lumber, about 2 cents per kilogram; sugar and chewing tobacco absolutely prohibited.

The heaviest export tax is on tonca beans, which pay 35 cents per pound, gross weight. The American brig Anita, which left here November 28, 1883, paid about $14,000 gold on her inward cargo and about $12,000 on her outward cargo of hides, coffee, tonca beans, balsam copaiba, deerskins, &c.; one item alone, 25,830 pounds tonca beans, paid $9,000 United States gold as duties.

All these goods are introduced into the United States without paying one cent of duty, as they are all on the free list.

All the flour consumed here comes from the United States. Some 12,000 barrels are imported annually of the best brands in the market. "Haxell" is the favorite. Ten thousand barrels of this article come direct from New York, and about 2,000 barrels from Trinidad. There is also a very large amount of lard consumed, mostly of the Wilcox brand, which comes from New York.

THE GUAYANA GOLD MINES.

The increasing importance of the Guayana gold mines is attracting the attention of European speculators, as you will see by the list of mining companies I inclose. In it you will see that for the most part they are English companies. The population in the mining district is slowly but steadily increasing year by year as the development of the mines goes on. Every fortnight a new batch of negroes from the adjacent colonies arrive in the steamer Bolivar, which plies regularly twice a month between here and Trinidad, conveying on its return trip the cattle consumed by the population of that island.

GOLD EXPORTS.

Statement of gold exported from the Guayana mines, through the port of Ciudad Bolivar, Venezuela, from January 1 to December 31, 1883, via steamer Bolivar to Trinidad:

	Ounces, Troy.
January	11,882.28
February	10,120.25
March	11,509.80
April	13,255.60
May	15,138.84
June	13,647.10
July	13,707.02
August	18,354.13
September	16,144.42
October	19,198.55
November	19,423.89
December	18,429.59
Total	180,811.47
Approximate value in United States gold	$3,338,058

LIST OF MINING COMPANIES ESTABLISHED AT THE GOLD MINES OF VENEZUELAN GUAYANA.

CRUSHING AND PRODUCING GOLD.

El Callao Company, 60 stamps; Venezuelan company.
Chile Gold Mining Company, 40 stamps; English company.
Potosi Gold Mining Company, 50 stamps; English company.
Nacupai Gold Mining Company, 50 stamps; English company.
Venezuela Panama Company, 50 stamps; English company.

DEVELOPING THEIR MINES.

Alianza de Cicapra Company, 40 stamps; English company.
Callao Bis Company, 20 stamps; English company.
La Eureka Company, 25 stamps; French company.
Bolivar Hill Company, no mill; French company.
West Callao, no mill; English.
Cicapra and Mercedes, no mill; English.
La Union Company, mill ordered; Venezuelan.
La Segura Company, mill ordered; French.
La Victoria, mill ordered; English.
New Callao, mill ordered; English.
Santa Rosa Company, 20 stamps; Venezuelan.

STOPPED FOR WANT OF CAPITAL.

Nueva Hansa Company, 40 stamps; Venezuelan company.
El Tigre Company, 20 stamps; Venezuelan company.
San Luis Company, 20 stamps; Venezuelan.
La Concordia Company, 20 stamps; English.
El Arbolito Company, no mill; Venezuelan.
San Salvador, no mill; Venezuelan.

JOHN DALTON,
Consul.

UNITED STATES CONSULATE,
Ciudad Bolivar, Venezuela, February 18, 1884.

TRADE OF MONTEREY.

REPORT BY CONSUL CAMPBELL.

I have the honor to submit the following notes upon the trade of Monterey, which may be interesting to the manufacturers and merchants as well as to the general readers in the United States. It is a matter of impossibility to obtain minute and accurate statistics in some of the branches of trade of Monterey, as those engaged therein keep no well-regulated accounts, while others for reasons peculiar to themselves prefer to withhold the desired data. Therefore in some instances we are compelled to give generalities and approximate estimates.

IMPORTS AND EXPORTS.

It will be observed from the following comparative statement of exports and imports of Monterey, that the imports greatly exceed the exports, which difference is increasing rapidly every year. The greater

part of these imports are from the United States, and since the reciprocity treaty between the United States and Mexico has been ratified, the trade between the two countries will be increased tenfold, at least, within twelve months after the treaty becomes operative.

Exports to the United States.—The principal exports from the port of Monterey to the United States are: ixtle, horse-hair, goat skins, pecans, lead and silver bullion, sarsaparilla, horses, mules, cattle, beans, peas, pilloncillo or crude sugar, and oranges. Of these, ixtle stock, horse-hair, and goat skins constitute the bulk. More of the lead and silver bullion is shipped to England, on account of the excessive rate of tariff charged on such by the United States Government. The calf skins are all exported to France, because they claim that they get a better price for them and in return secure skins much better tanned for a less price than in any other country.

Imports from the United States.—The principal articles imported from the United States are barbed wire for fencing, plows and other agricultural implements, iron, blacksmith and carpenters' tools, tin and tinware, axes, hatchets, hammers, nails, brads, scissors, butts, hinges, locks, smoothing-irons, crimping-machines, bells of all kinds, cutlery, cane-mills, corn-mills, coffee-mills, wind-mills, pumps, straw and hay cutters, corn-shellers, all the irons for carriages and wagons, iron safes, scales, wheelbarrows, scrapers, spades, shovels, chains, hames, woodenware of all kinds, ax-handles, brooms, oak and hickory for manufacture of wagons and carriages, coal oil, lamps and lanterns, glassware of various kinds, clocks and watches, silver-plated ware, printing-presses, letter-presses, wrapping-paper, paper sacks, stationery, fire-arms of every description, gunpowder, blasting-powder, shot, caps, cartridges, dynamite, furniture, lumber, sewing-machines; dry goods, as towels, bleached domestics, sheetings, shirting, calico, cottonades, oil-cloth, drugs and chemicals of all classes, toilet articles, paints, varnishes, oils, brushes, tobacco, corn, cotton, hay, butter, cheese, crackers, pickles, canned meats, whisky, ice, sugar (refined), condensed milk, &c.

Agricultural implements.—The principal wholesale hardware stores in Monterey are those of Rodolf, Dresel & Co., and Vinda de Santiago Langstroth. Both carry very heavy stocks. They imported last year, 1883, 2,254 American plows; Dresel & Co. 1,854, and Lanstroth 400. They import very largely from the United States, and keep on hand every description of American agricultural implements, hardware, cutlery, &c., which are coming more into demand every year, and have almost entirely driven out of this market the English and German goods which formerly had a monopoly. From January 1, 1883, to March 1, 1884, the Mexican National Railroad delivered at Monterey 228 carloads of machinery and agricultural implements shipped from the United States.

Sewing-machines.—Among the sewing-machines sold here we find the Singer, Wheeler & Wilson, Leader, White, New Home, Remington, Wilson, Davis, and Domestic. From the most reliable information that can obtain the Singer Company, of which Mr. F. M. Hagner is the manager here, employ at this place thirteen men and eight wagons. They sold in 1883 1,800 machines in this district. There were about 5,000 machines of all kinds sold that year, and the work goes bravely on.

Kerosene.—The importation of kerosene oil exceeds that of any other article. From the 1st of January, 1883, to 1st of March, 1884, there were 160,070 gallons received at this depot, the duties on which aggregate $43,209.90. It retails at 75 cents a gallon. I inclose a tabulated

ent of quantities, &c., of each month during that year. As this is re-
ved of duties by the treaty lately ratified the quantity consumed last
ar will be doubled, at least, during another year, which fact will, of
urse, give a healthy impetus to the sale of lamps and the like. A great
al of the oil imported is very much adulterated, causing the lamps to
ve an exceedingly poor light. The people are complaining constantly
out it.

Windmills.—The demand for windmills is fast increasing. Messrs. Grange & Bro., agents for them here, sold 47 in last two months. One the most interesting items of trade of Monterey is that of paper.

Paper and stationery.—Up to a short time ago most of the stationery d here was imported from Europe, principally from France, but the portations of paper from the United States have made wonderful ides in the last twelve months. In twenty months, extending from nuary 1, 1882, to November 1, 1883, there were imported to Monterey ut 525,579 pounds of paper and stationery, such as writing paper, pping paper, blank books, &c. The duties alone on said quantity paper amounted to $44,933.86. I inclose a table of particulars, en from the books of the custom-house at Monterey. This should a very important topic for the manufacturers of paper in the ited States. And as paper is not included on the free list con-ed in the recently ratified treaty between the two republics, it y be worth the while of some of the capitalists in the States to look the propriety and profits of building a paper-mill in this part of ico. There are but six paper-mills in the republic; four in the city Mexico, one in Vera Cruz, and one in Guadalajara, in the State of isco, which leaves Central, North, and East Mexico without any. The at Guadalajara in one year manufactured 80,002 reams of writing wrapping paper, in the manufacture of which it used 888,550 pounds material at a cost of $54,693.24. The price of labor ranges from 25 ts to $1 a day, according to the class and skill of the laborers. Mexi-n women could be very profitably employed in such a factory. They intelligent, ingenious, and industrious. Material suitable for the nufacture of paper is very abundant in the country. Fibrous plants w luxuriantly throughout the whole land. The wholesale price per n of 25 pounds, 22 by 32, of paper for newspaper purposes, is from .80 to $6.20 in Monterey. Writing paper ranges from $2.50 to $12 a am. Envelopes sell at from 50 cents to $1.50 a hundred, and manila per, 24 by 32, and thin, at $12 a ream. These data are reliable, and I ink will prove valuable to paper manufacturers in the United States. Exports from Monterey to the United States since January 1, 1884, nsisting of ixtle, goat and kid skins, horse-hair and horses, amounted value to the sum of $20,673.02.

ROBERT C. CAMPBELL,
Consul.

UNITED STATES CONSULATE,
Monterey, Mexico, April 10, 1884.

Imports of coal oil at Monterey from the United States from January 1, 1883, *to* 1, 1884.

Date.	Number of cases.	Number of gallons.	Kilograms.	Cu d
1883.				
January	2,812	28,120	84,360	$
February	1,061	10,610	31,830	
March	1,302	13,020	39,060	
April	395	3,950	11,850	
May	522	5,220	15,660	
June	306	3,060	9,180	
July	735	7,350	22,050	
August	456	4,560	13,680	
September	703	7,030	21,090	
October	1,078	10,780	32,340	
November	1,115	11,150	33,450	
December	1,408	14,080	42,240	
Total	11,893	118,930	356,790	3
1884.				
January	2,334	23,340	70,020	
February	1,780	17,800	33,400	
Total	4,114	41,140	103,420	1
1883	11,893	118,930	356,790	3
1884	4,114	41,140	103,420	1
Grand total	16,007	160,070	460,210	4

...Laredo and Matamoros from 1st of January, 1882, to 1st of November, 1883.

Date.	Stationery and blank books.	Straw paper.	Letter paper.	Printing paper.	Flat and ruled writing paper.	Envelopes.	Wrapping paper.	Colored paper.
1882.	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*
January	109,260	5,866,520	817,900	261,000	1,526,000	21,000	132,000	47,940
February	441,250	4,258,260	1,415,610	636,000	2,506,290	.....	329,610	.....
March	150,000	7,222,270	380,230	3,599,000	1,924,440	.....	1,068,560	1,260
April	78,640	18,881,590	957,950	.....	4,040,140	174,000	210,110	189,000
May	73,910	1,572,780	766,300	575,000	1,517,070	193,420	363,020	163,000
June	114,360	5,314,020	263,160	1,559,020	2,715,000	137,800	142,840	25,000
July	113,900	7,960,720	546,270	1,813,130	1,790,500	1,880	224,080	25,000
August	403,830	5,123,230	2,034,060	1,179,450	1,186,320	325,570	184,360	21,000
September	127,530	7,011,080	982,130	1,878,860	2,737,450	102,250	.....	.....
October	1,101,100	1,931,270	957,560	11,000	832,000	191,670	93,360	.....
November	293,330	3,032,730	639,000	1,515,050	5,562,580	175,280	80,640	66,400
December	198,890	5,414,940	887,280	493,180	1,917,300	20,700	121,360	9,000
Total	3,206,000	73,589,410	10,647,450	13,520,690	28,255,090	1,343,570	2,849,940	547,600
1883.								
January	1,562,710	5,852,570	1,626,310	2,434,250	1,758,970	139,480	1,503,070	263,410
February	1,366,620	8,645,990	721,820	.....	3,387,540	442,810	836,370	646,640
March	1,283,240	2,030,470	479,610	1,566,810	2,082,180	486,150	650,850	19,600
April	1,634,830	1,806,840	536,110	2,560,000	4,301,000	823,390	139,720	8,520
May	679,250	6,035,340	1,178,600	45,760	2,115,960	1,374,930	82,080	12,000
June	598,000	2,853,560	558,220	11,082,000	852,890	254,210	504,000	115,000
July	731,950	3,959,420	1,024,350	3,345,680	4,245,980	112,130	93,000	.....
August	160,100	6,684,630	767,380	1,898,000	3,281,000	560,160	1,001,900	.....
September	171,160	2,662,280	2,304,150	.....	2,060,190	56,000	227,620	.....
October	860,240	3,881,000	1,970,790	1,784,000	4,095,000	301,200	373,000	277,840
Total 1883	9,048,100	44,412,100	11,167,340	24,716,500	28,180,710	4,550,460	5,411,610	1,343,010
Total 1882	3,206,000	73,589,410	10,647,450	13,520,690	28,255,090	1,343,570	2,849,940	547,600
Grand total	12,254,100	118,001,510	21,814,790	38,237,190	56,435,800	5,894,030	8,261,550	1,890,610
Duties per kilogram	Av. 29 cents.	Av. 7 cents.	Av. 43 cents.	Av. 10 cents.	Av. 29 cents.	Av. 43 cents.	Av. 10 cents.	Av. 10 cents.
	$3,553 68	$8,260 10	$9,380 35	$3,823 71	$16,366 38	$2,534 43	$826 15	$189 06

Total duties on imports for twenty months, ending November 1, 1883, $44,933.86.

COMMERCE AND INDUSTRIES OF ASIA MINOR.

REPORT BY CONSUL STEVENS, OF SMYRNA.

IMPORTS.

The value of imports in Smyrna from all countries during 1883 amounted to $21,074,939, being an increase of $3,907,515 over the imports during the previous year. This increase is mainly upon the following articles, which were imported in larger quantities than usual, in order to make up the deficiency in the stock and supply the demand of inland markets, viz: Cloths, $391,800; coffee, $230,530; cotton yarn, $462,400; drugs, $645,000; hardware and iron tools, $245,410; manufactures of cotton, $725,660; woolen goods, $474,400.

EXPORTS.

The aggregate value of exports from Smyrna during the year 1883 amounted to $20,045,955, being an increase of $2,737,303, or more than 15 per cent. over the exports during the previous year, due chiefly to the large crops of barley, beans, cotton, figs, opium, raisins, and valonia.

THE CROPS OF 1883.

The very considerable increase in the trade of Smyrna is the result of unusually abundant crops. The previous season of 1882 was a very dry one, and the crops correspondingly light. For several seasons, prior to 1882, swarms of locusts had made havoc in many districts, largely diminishing the yield. But during the winter of 1883 the rainfall was abundant, and was followed in March and April by copious showers.

For all the staple crops, except figs and raisins, the weather continued favorable until harvest time, and the yield in both quantity and quality was above the average. Heavy showers during the last of August impaired somewhat the quality of the fig and raisin crops, these fruits requiring dry and sunny weather from May until they are gathered in September.

MOVING THE CROPS.

From the beginning of the harvest in July until the end of the year the two lines of railway which connect Smyrna with the interior have been operated at their fullest capacity in moving the crops. One line, the Ottoman Railroad, skirts the valley of the Cayster, then crosses the Dynma hills to Aidin and the fertile valley of the Meander beyond, a distance of 152 miles. The other follows the valley of the Hermus to Alasheir, a distance of 104 miles. Both lines are managed by Englishmen. When first constructed neither line was remunerative, but both must now pay good dividends.

TRADE WITH THE UNITED STATES.

The return of trade with the United States for the year 1883, as compared with that of 1882, shows a decrease of imports of $14,274, due to the falling off in the demand for American alcohol, and an increase of $603,331 in the exports, largely made up by the increase in the exports of figs, licorice root, and opium, which in the aggregate amounts to over half a million dollars.

IMPORTS FROM THE UNITED STATES.

The Turkish Government, in imitation of France and Germany, has excluded the importation of American pork; but this does not prevent the transshipment, via English ports, of American hams to this market, where there is a considerable demand for them. American cheese, canned goods, cured fish, &c., reach Smyrna via England, and do not always appear among the direct imports from the United States. A dealer in these articles estimates the value, in round numbers, of the sewing machines of American manufacture put upon this market during the past year at $4,000; of spout and force pumps, $4,000; of clocks, $1,000; of preserved and canned meats, $600; of agricultural implements, $200; of patent medicines, $1,000; but by properly-directed efforts he believes the trade in all these articles might be largely increased. He is convinced, moreover, that were the improved farming tools and other labor-saving devices of American manufacture once fairly introduced here they would find a profitable market. To this end, however, one thing is indispensable, viz, manufacturers and dealers must not only begin by making consignments largely on their own account, but they must be content to wait a long time for returns. Long credits are the rule in this country. By pursuing a similar course, English, Austrian, German, and French manufacturers have secured almost a monopoly of this market in such articles as clocks, watches, stoves, furniture, carriages, musical instruments, sewing machines, pumps, churns, &c. Turkey, it should be remembered, is not a manufacturing country, and is, perforce, a large purchaser in foreign markets.

American petroleum.—Among the imports from the United States, petroleum holds the first place, notwithstanding Russian competition, carried, in some instances, beyond the bounds of fairness, as I have heretofore had occasion to make known to the Department. The imports of American petroleum during 1883 show an increase of 37,083 cases over 1882. The failure thus far to supplant this article with the products of the wells from Baku is due to its superior quality. The Russian article has a very rank smell when used for illuminating purposes. With an article equally as good—and this may be secured by improved methods of refining—the Russians could supplant us in this market. It behooves American manufacturers, therefore, to maintain the quality of their shipments, and, if possible, without raising the price, to improve it. By keeping to this policy they may remain masters of the situation for some time to come.

Alcohol.—American alcohol is losing its hold upon this market, the imports having fallen from 2,590 barrels in 1882 to only 50 barrels in 1883. Austrian and Russian grain spirits are now in favor, it would seem, with manufacturers of *raki* (mastic brandy), on account of their cheapness.

American cottons.—These continue in favor here, notwithstanding the many English imitations and counterfeits. Their superiority is generally conceded, but complaint is made by some merchants that American manufacturers do not understand the needs of this market in the matter of form, quality, and price. One merchant who imports heavily from England said to me, "If your manufacturers would put in a thread or two less, reduce the width, and put up in packages double the usual size, making the price to correspond, they might monopolize this market." He complained that American goods were not well packed for shipment, and that on this account importers here were frequently losers.

EXPORTS TO THE UNITED STATES.

The principal articles of export to the United States are licorice-root, wool, opium, figs, carpets and rugs, and emery-stone. Some facts which I have gathered with regard to several of these articles may, I think, be appropriately given here, and perhaps prove valuable to dealers and consumers in the United States.

Licorice-root.—The export of licorice-root to the United States the past year aggregated $649,057, against $471,028 in 1882. The quality of the root grown in this province is excellent, and the facilities for its production almost unrivaled. Unfortunately, however, this production is under the almost exclusive control of one or two firms which, by reason of their great wealth and priority of possession, have been able to maintain a virtual monopoly of the traffic, although they hold no exclusive title to it. Recently, efforts have been made to break down this monopoly, with what success remains to be seen. I feel sure that were our American manufacturers to establish an agency here and make contracts directly with the small proprietors in the licorice-growing districts for a term of years, they would be able to save yearly no inconsiderable sum. American purchasers of emery-stone, and dealers in other products of this country, might also reap no small advantage by the establishment of agencies here, presided over by sagacious, go-ahead native Americans.

Opium.—This not inconsiderable product of Asia Minor reaches foreign buyers, through the port of Smyrna, only as it suits the supposed interest of two or three parties who are usually able to control the local market. American buyers at the places of production might break up the monopoly, or at least secure better terms than are possible under the present regimen.

Wool.—The wool market is also controlled by a few operators, and there is, I fear, ground for the suspicion that the low prices for carpet wools steadily maintained have a close relationship to the graduated duties levied under our tariff laws. Wool is brought here from Syria and reshipped to foreign markets.

EMERY MINES AND EXPORTS.

As no inconsiderable part of the annual product of the emery mines of this province is exported to the United States, as it is the sixth article in point of value thus exported, some facts bearing upon this production may not come amiss. For many years one or two parties holding concessions from the Government maintained a virtual monopoly of the emery-mining industry, and kept up prices accordingly, the rough stone being sold at the rate of £16 sterling per ton. To-day, £5 sterling per ton is an average price. How much of this falling off in price is due to competition, deterioration, or decrease of consumption, can only be estimated. The mines are worked either under "firmans," or concessions, obtained from the Government only with difficulty and large expense, or through contracts made with the "estates of the Church Ottoman," known as "vacouf." In the latter category are the mines of "Gumnah Dagh," near Sokia, and about four hours distant from the station of Azizie, on the line of the Ottoman Railway, which station is about 7 miles from Ephesus. These mines pay to the "vacouf" a royalty of so much per ton on all the ore extracted, which is transported on mules and donkeys to the station at Azizie, and taken thence to Smyrna by rail. The road from the mines to the station being

y rough and over mountains, camels cannot be employed, a serious wback, inasmuch as the carrying capacity of a mule is only equal to nt one-ninth of a ton. The quantity of emery yet unmined in these rries of the Gumnah Dagh is large, but the quality is below the ıdard. There is a large proportion of green and vitreous looking ıe, and the best specimens, when tested, are found not to be as hard hose from the Cosbunar and Thyra mines, although the grain is fine clear from foreign matter. The Thyra mines, known as the aliogali, located on a range of hills between Cosbunar and Thyra, within and one-half hours by camel from Cosbunar to station on Ottoman way, 40 miles from Smyrna. They are operated by several parties er concessions from the Turkish Government, for a term of ninety- years. Formerly large quantities of excellent emery were taken but of late years it has become difficult to extract the ore, which nveyed on the backs of donkeys to the plain. At the foot of this ge of hills is the Coursak mine, a large, irregular bed of emery, not dle, mixed with earth. It is easy of extraction, no powder being re- ed, but is covered with from 15 to 25 feet of silt, the accumulation ges. This mine is not as productive as formerly, and considerable he stone is inferior, being more or less oxidized, the deteriorating ent in all emery stone found in a loose state. Much of this inferior lity of stone finds a market in Germany and the United States. In mery deposits there is the risk of a sudden exhaustion of the ore. s fact, taken in connection with the difficulty of procuring conces- s, the peculiarities of Turkish laws, and the export duty of 20 per ., *calculated at the selling price in Europe*, does not encourage enter- e in the direction of opening up new mines, or deepening old ones, ough experience proves that the best emery comes from the great- depths. Moreover, the mineral in the best lodes is so compacted cemented by a calcareous deposit produced by filtration that shot- s can only be bored with the greatest difficulty, the wear and tear he drills being very great. The use of dynamite having been pro- ted, the only explosive agent permitted the concessionnaire is a inferior kind of blasting-powder furnished by the Government.

he following table will show the exports of emery-stone from the of Smyrna during 1883:

Whither exported.	Quantity exported during 1883.	Average exports of late years.	Increase.	Decrease.
	Tons.	*Tons.*	*Tons.*	*Tons.*
d States	5,300	2,100	3,200	.....
nd	3,850	4,200	.....	350
nd	973	350	623	.....
um	342	70	272	.....
e	208	140	68	.....
any	130	70	60	.....
ria	22	70	.....	48
Total	10,825	7,000	3,825	.....

SMYRNA CARPETS AND RUGS.

s there is a considerable trade with the United States in Turkish ets, some particulars bearing upon the various kinds, qualities, and es of those manufactured in this province may not come amiss. se are of three kinds, named after the respective localities in which

they are manufactured, as follows: Ouchac, Ghiordes, and Coula. I begin with the

Ouchac carpets.—The manufacture of carpets at Ouchac has taken of late years a large extension. Thus, some ten years ago the production, which did not exceed 750,000 square feet per year, was amply sufficient to supply the demand for exportation; at present, however, this locality supplies to commerce annually about 902,000 square feet of carpets entirely woven with wool. These carpets are greatly appreciated in foreign markets on account of the good quality of the materials, beauty of the patterns, and durability of the colors. The wholesale prices, which vary according to the quality of wool, size, pattern, dyes, and finish of manufacture, run from 22 to 44 cents in gold per square foot. This locality produces also about 50,000 square feet per year of *kilims* (carpets of inferior quality), the exportation of which varies with the fluctuating demand abroad. The prices vary from 14 to 19 cents in gold per square foot.

The exportation of Ouchac carpets is, by approximation, distributed as follows:

Countries.	Bales.	Square feet per bale.	Total square feet.
England	430	700	301,000
France	500	500	250,000
United States, Italy, Austria, Egypt, and Turkey	780	450	351,000
Total	1,710		902,000

These 902,000 square feet, estimated at an everage of 33 cents in gold each, represent an aggregate value of $297,660.

Ghiordes carpets and rugs.—The factories of this locality compete in activity with those of Ouchac in order to be able to supply the demand of their products abroad. The manufacture of Ghiordes carpets and rugs, which in 1873 was about 175,000 square feet per year, has considerably increased since, and now amounts to nearly 275,000 square feet. They are sold at wholesale prices varying from 26½ to 30¾ cents in gold per square foot. They are woven with equal parts of wool and cotton, and are not, for this reason, as strong as those of Ouchac; still they have the preference with certain classes of buyers on account of their cheapness, the brightness of their colors, and the tastefulness of their patterns.

The perfection reached, in a short period, by the workmen of Ghiordes in the imitation of Persian rugs, demonstrates their cleverness and perseverance. It places them on a footing with the best weavers in Europe, and presages prosperous times for their country in an early future. The importing markets are:

Countries.	Bales.	Square feet per bale.	Total square feet.
United States	130	1,150	149,500
France	58	600	34,800
England	54	750	40,500
Austria, Italy, Egypt, and Turkey	100	500	50,000
Total	342		274,800

Which, at an average price of $0.286, gives $78,592.80 for the value of the whole manufacture.

Coula carpets and rugs.—Coula produces yearly about 540,000 square feet of carpets and rugs of a great variety of qualities, sizes, and patterns. The textile stuffs worked upon are hemp or jute and wool; the dyes used are inferior vegetable colors and aniline dyes.

The Coula workmen imitate quite closely the Persian and other patterns of Eastern origin, but owing to the variety of their products and the poor quality of materials used, they flood the market with inferior and low-priced articles. The carpets and rugs woven entirely with hemp are usually sold by the piece; those made with equal parts of hemp and wool, by the piece or on measurement, according to bargain; the carpets made entirely of wool, and usually of large dimensions, on measurement.

The approximate proportion in the manufacture of these three kinds of carpets and rugs, as well as their respective wholesale prices, are:

Kinds.	Square feet.	Price per square foot.	Value.
Hempen carpets and rugs	426,500	$0.1056=	$45,038 40
Hemp and wool carpets and rugs	85,000	0.2112=	17,952 00
Woolen carpets	28,500	0.3168=	9,028 80
Total	540,000		72,019 20

The exportation of the Coula carpets and rugs is distributed as follows:

Countries.	Bales.	Square feet per bale.	Total square feet.
United States	216	1,000	216,000
England	144	1,000	144,000
France, Italy, Egypt, and Turkey	180	1,000	180,000
Total	540		540,000

Which, at an average of $0.1334 equals $72,036.

MANUFACTURE OF SMYRNA WINES.

Notwithstanding the extensive cultivation of grapes, large quantities of which are exported to France and Italy, and there converted into wine, only about 5,000,000 gallons of wine were manufactured here last year, and that of an inferior quality. There would seem to be no reason why good wine should not be made here. So thinking, some German capitalists have purchased a large tract of land in the interior, where they will place a German colony and proceed to the manufacture of wines on a large scale. The scheme, if successful, will no doubt attract a large German population and thus prove of incalculable benefit to this country.

NEW TARIFF REGULATIONS.

I have been shown the schedule of the new tariff regulations which it is proposed to put in operation next July. If this draft is adopted it cannot fail to act disastrously upon American trade with Smyrna, since it discriminates against nearly every article produced or manufactured in the United States for which there is a market in Turkey.

The new quay tariff appears to give satisfaction. Under it there is a reduction of from 12 to 25 per cent. in former charges and a more equal distribution. Before the new arrangement merchants doing business with America were constantly complaining of exactions on the part of the quay company. Since its adoption I have not had occasion to make a single protest.

FRAUDULENT PRACTICES IN THE FRUIT TRADE.

The cultivation of fruit—figs and raisins—is one of the principal sources of the wealth of this province. The figs of Smyrna command the markets of Europe and America. The raisin product is also in great favor abroad. Inasmuch as large quantities of these fruits are annually exported to the United States, I desire to put home dealers upon their guard against an imposition which has come into practice among a certain class of small dealers here. Formerly the market price of fruit for export was governed by the size of the crop, its quality, and the number of the orders from abroad. It is somewhat different now. A class of dealers having little or no capital enter into correspondence and effect sales in foreign markets in anticipation of the new crop. By this means they succeed in getting orders to buy fruit here of a particular description, and, upon shipment, to draw to the extent of 70 per cent. of the gross amount of their invoices, it being agreed that the balance is to be paid by the importer after the sale of the merchandise. Up to this point the proceeding seems regular. Meantime, however, the local exporter is not only careful to buy the most inferior merchandise obtainable, but also to overvalue the same in his invoice, in order to conclude in advance his account with the foreign importer. In making his purchase from the grower he is given the time necessary to receive the amount (70 per cent.) drawn from the importer, and thus the whole transaction, involving perhaps thousands of dollars, is effected by the exporter, who may not possess a sou to his name. Instances are on record where these operators have falsified the measurement of their shipments, perhaps doubling the actual quantity and drawing on the consignee accordingly. The evil effects of such practices are far-reaching They crowd foreign markets with an inferior article, and unsettle and depress legitimate trade both at home and abroad

NAVIGATION OF SMYRNA.

There is an increase in the number and tonnage of the steamers, and a decrease in the number and tonnage of sailing vessels during the year 1883, when compared with the traffic of 1882. On the steamers the English flag takes the first place; the French second; Austrian, third. Of all the commercial craft loading and unloading at this port during the past year not one floated the Stars and Stripes!

W. E. STEVENS,
Consul.

UNITED STATES CONSULATE,
Smyrna, March 24, 1884.

ıOPOSED CHANGES IN THE NEW CHILIAN TARIFF LAW.

REPORT BY MINISTER LOGAN, OF VALPARAISO.

ler cover of my dispatch No. 123 I sent you a complete translation new Chilian tariff,* accompainied with some remarks going to wherein the commerce of the United States could be largely bene- by the new law.

›w have to inform you that there is a probability that the law and will be repealed by the present Congress, though I hope there will › a return to the old system. The cause for this is said to be found fact that under the operation of the new law the customs revenue ›rgely decreased. As this deficiency of revenue could be remedied general increase of rates, I think there must be other reasons of . I am not at present informed.

his repeal be made I think it will be a cause for serious regret g our mercantile and manufacturing community, and I sincerely that some means may be found by which the Government may be ed to reap the necessary income and at the same time preserve esent law, which I think is considered by importers generally to ery fair one.

› possible discriminations of the "vista" or inspecting system rly in vogue may be illustrated by the case of American sewing- nes, as related by Mr. Bassett, an American in that business in ›raiso.

› great superiority of the American machine over that of any nation is universally conceded. The Chilian market is flooded ll classes of cheap machines made in Germany, France, and Eng-

›rder to give these machines character they are made in close ex- imitation of the best classes of American manufacture; as, how- the latter are conceded by one and all to be the best, I am in- d by Mr. Bassett that it was the custom under the old system, which ›test was sufficient to change, to charge from $5 to $10 higher duty American machines than upon European machines of the same ed class, simply because the former were good machines with an lished reputation for excellence which the latter did not have. vas certainly an abuse by the local authorities, and it operated to e to a large extent the profits of the American firms, as the ma- › were put upon the market with a discriminating duty upon them, the price to the buyer was necessarily put down in competition he cheaper machine.

n told by Mr. Bassett that he sells a machine here which is re- in New York at $50 gold, for $45 in Chilian currency, which lat- not so good as ours by from 40 to 45 per cent.

ler the new law, which charges duty according to the weight of ticle, the American machine pays an equitable duty and has a ›ld for competition upon its merits.

› Government of Chili has no intention, I am sure, of discriminat- gainst American importations, and the discrimination reported by Bassett must have been entirely without the knowledge of the of departments. But the possibility of subordinates practicing methods of this description shows that the system is not a good It is therefore to be hoped that it will not be returned to.

C. A. LOGAN.

ATION OF THE UNITED STATES,
Valparaiso, January 2, 1884.

* Published in Consular Reports, No. 35.

BRITISH CONSULAR SERVICE IN MADAGASCAR.

REPORT BY ACTING CONSUL WHITNEY, OF MADAGASCAR.

I have to report for the information of the Department that Mr. J. Hicks-Graves, British consul for Madagascar, has lately made the following appointments on the east coast of the island.

Mr. G. d'Emmerez de Charmoy, vice-consul at Vohimaro, northeast coast; Mr. E. d'Espagnac, vice-consul at Ambohitsara, near Ugoncy, latitude about 15′ 15″ south; Mr. A. G. Jones-Baylis, vice-consul at Fenoarivo, 60 miles north of Tamatave; Mr. Pellegrin, vice-consul at Andevoranto, latitude about 19′ south.

All these gentlemen have resided in Madagascar for several years, and have been more or less extensively engaged in commerce here. The extent of their districts will probably correspond with that of the Hova governors.

Vohimaro (Mr. d'Emmerez).—The chief commercial wealth of this district is said to be gum-animi, of which there are forests not far from the seacoast. Bullocks are exported from Vohimaro to Mauritius and to Réunion. The trade of Vohimaro is in fact largely with those islands.

Ambohitsara (Mr. d'Espagnac).—The large towns in this district are Ugoncy, Antalaha, and Sambava, in all of which there are quite a number of foreign traders. Considerable India rubber is obtained in this district, and it is said to be rich in gum-animi. The trade of this district is principally with Tamatave.

Fenoarivo (Mr. Baylis) is the second largest rice port (Mahanoroo, latitude about 20′ south, is the largest) on the east coast. India-rubber and hides are obtained in moderate quantities in this district. Aside from rice, of which Mauritius and Réunion take large quantities direct, the trade of the district is with Tamatave.

Andevoranto (Mr. Pellegrin).—Rofia fiber is obtained in this district. Vessels cannot enter at the town of Andevoranto on account of sandbars in the mouth of the river. The town is chiefly important from its location at the junction of several important highways with the most important road from this coast to the capital, or Antananarivo, over which road there is a very large amount of traffic and travel. Most of the trade of the district is with Tamatave.

Respecting these appointments in the British consular service I would quote the following from the Madagascar Times, a paper published at the capital, and owned and edited by an Englishman:

> The English community in Madagascar will hail with pleasure the active measures lately taken by Mr. Graves, the new counsel, in appointing vice-consuls all along the east coast.
>
> British subjects will no longer feel in the abondoned condition in which they have been left for many years.
>
> Foreigners will now have some protection against the petty exactions and annoyances of subordinate Hova officers; and the Hova government will now be able to cope with the lawless and disgraceful proceedings that have long characterized the commerce on the east coast, with the intention of defrauding the Queen of her revenue.

There has been a British vice-consul at the port of Mahanoroo for several years.

R. M. WHITNEY,
Vice and Acting Consul.

UNITED STATES CONSULATE,
Tamatave, April 4, 1884.

TRICHINÆ INVESTIGATIONS IN HOLLAND.

REPORT BY VICE AND DEPUTY CONSUL VINKE, OF AMSTERDAM.

I have the honor herewith to transmit a translated copy of a report recently made to the minister of the interior of the Netherlands of certain inspections and investigations relating to trichinæ in pork imported from the United States. The investigations were carried on over a period of nearly two years and under the supervision of persons well qualified for the task, and who had been appointed for that purpose by the Government. Of the investigation in question a provisional report was made as long ago as November, 1882, extracts of which are embraced in the report of Consul Eckstein on "American pork in Holland," transmitted with his dispatch No. 261, of January 11, 1883,* and to which I would in this connection respectfully refer.

ALBERT. VINKE,
Vice and Deputy Consul.

UNITED STATES CONSULATE,
Amsterdam, January 30, 1884.

TRICHINÆ INVESTIGATIONS.

The Staatscourant of 17th instant contains the following conclusion on the examination relative to the presence of trichinæ in pork imported from America:

At the close of our late report, delivered in October, 1882 (Staatscourant, November 3, 1882), on an examination concerning the presence of trichinæ in American pork, we then promised to give a subsequent account of our unfinished researches. We are now enabled to do so, and give the report of the director of the veterinary school of the second series of the tests of comestibles.

Continuation of the report concerning the tests of comestibles with trichinous American pork made at the Ryks Veeartsenyschool (Government veterinary school).

In my report dated June 10, 1882, is mentioned that the pigs—

A fed the 12th and 13th February, 1882, with 4 hectograms of boiled flesh of the shoulder, marked E, No. 64, pretty strongly charged with trichinæ (18–10); and

D fed the 13th, 14th, and 26th of February and 12th of March with 3 hectograms of unboiled flesh of the shoulder, marked B, No. 130, moderately charged with trichinæ, remained after the feeding in perfect health, and had grown admirably and were still present in the stable.

Of the pig A I have taken, October 4, 1882, about eight months after the feeding, by means of a harpoon made for the purpose of examining flesh with trichinæ, little of meat from the masseter, the carotic, scapular, and femoral muscles. The result of the microscopic examination of these pieces, overloaded with fat, was entirely negative.

Both the pigs A and D were killed the 4th of April, 1883, about fourteen months after feeding on trichinous flesh. The next day a hundred pieces of pork from each of the pigs were examined microscopally, taken from the following muscles:

Midriff, right half, 10; left half, 10	20
Intercostal muscles, right half, 10; left half, 10	20
Lumbal muscles, right half, 5; left half, 5	10
Abdominal muscles, right and left together	5
Carotic muscles, right and left together	5
Gluteal and femoral muscles, right, 5; left, 5	10
Ocular muscles, right and left together	5
Laryngeal and glosso-pharyngeal muscles, right, 5; left, 5	10
Masseter, right and left together	5
Scapular and brachial muscles, right, 5; left, 5	10
Total of pieces	100

* Published in Consular Report No. 27, page 130.

The result of the research was entirely negative. The pigs were approved for use and sold to a butcher.

A pig marked E, sound but misshapen (wanting a foreleg), was twice fed with trichinous flesh, cut into small pieces, which was eaten eagerly.

1st. The first time (October 6, 1882), when the pig was four months old, forty grams of unboiled flesh, mixed with a mash of rice-meal. This flesh was taken from the small piece of the gammon A, No. 71, strongly charged with trichinæ (52–10) by carefully cutting out a thin layer of muscular tissue from the center of a slice 4 centimeters thick.

2d. The second time, the 6th of April, 1883, six months later, when the pig was fully ten months old, 3 hectograms unboiled flesh, unmixed. This flesh was obtained in the same manner as the former from the part of the gammon A, No. 18, which was relatively slightly charged (4–10), but which was served in a seven and one-half times greater quantity.

After both these fodderings the animal remained healthy. The examination of the dead pig took place on the 17th of August, 1883, fully ten months after the first and fully four months after the second foddering. It was performed in the same way as is stated above of the pigs A and D. The result of this examination was also quite negative.

A. W. H. WIRTZ,

UTRECHT, *November* 29.

The conclusions come to by us from our previous researches are, therefore, in no wise modified, but are rather confirmed, by them, and we can now, at the end of our own researches, repeat:

"It has not appeared that the salted pork and bacon, as brought into the trade from America, offers any danger to consumers in this country of trichinous disease."

We must, however, observe that modifications in the treatment of the pork in America might induce modifications in the condition in which trichinæ arrive here, and, therefore, also in the extent of the danger attending the use of such meat. It would, then, be advisable to keep constantly on our guard against such meat.

This subject, it is true, is no longer of so great importance as some time ago, American pork having much risen in price and Dutch pork fallen. Consequently, less of this meat is now imported in Rotterdam than was the case a couple of years ago. Yet the quantity, viz, 1,113,875 kilograms, is certainly considerable enough to be a constant subject of caution.

EGELING.
DR. F. J. DUPONT.

THE HAGUE, ROTTERDAM, } *December* 27, 1883.

EMIGRATION FROM WURTEMBURG.

REPORT BY CONSUL CATLIN, OF STUTTGART.

THE RUSH FROM WURTEMBURG BEGINNING AGAIN.

I find in a recent number of the New York Tribune the following:

There has been a perceptible increase in immigration from Europe recently, but the agents of the great steamship lines do not think it will be so large this year as in the remarkable year of 1882, or even as in 1883. We are inclined to believe that a small decrease may even be expected, as there have been no exceptionally good times in this country to tempt people to come over and settle. Moreover, considerable influence is being exerted by the authorities of certain Governments in Europe to prevent their subjects from coming to the United States, at least in the prime of life.

The perceptible increase of which the Tribune speaks is, so far as Wurtemburg is concerned, fully corroborated by the movement now actually going on in this vicinity. As straws which show how the wind is blowing, I give herewith translations of a few stray paragraphs cut of late from the Stuttgart daily papers, viz:

Unterturkheim, March 12.—At present there exists here a *furore* for emigration, such as was never known before. Not less than seven families, consisting of about forty-five members contemplate leaving this village shortly to seek their fortunes

either in Australia or North America. Besides these, a number of single individuals are about to emigrate, and one hears daily of others who are tired of Europe. Nearly all the intending emigrants are wine growers, who, notwithstanding the year's failure, have sold out their vineyards at good prices.

Crailsheim, March 23.—Emigration to America from this district is once more on the increase. A week ago about thirty persons left in one party, and many more intend to follow.

Schorndorf, March 28.—The rage for emigration prevails. In the course of the present week alone, thirty persons have emigrated from this district to America and many more will follow.

Bremen, April 1.—The North German Lloyd will send five steamers this week to the United States, viz, two on Wednesday (one to New York and one to Baltimore) and three on Saturday (one to New York, and two to Baltimore). The ships will carry in all about 6,000 passengers.

Boennigheim, April 9.—Last week not less than twenty-three persons emigrated from here to America, among them two families comprising, in all, seventeen members. May they find across the seas that which they vainly endeavor to obtain here—prosperity.

THE OUTLOOK.

From the foregoing it may be fairly inferred that if already during the worst season of ocean travel such a tide is setting toward the United States the emigration later on promises to become enormous, greater even, perhaps, than in 1882. Germany sends on an average one-third of all the emigrants who come to us, and Wurtemberg, though in population forming less than one-twentieth of the whole German Empire, has hitherto furnished on an average one-twelfth of the German emigrants who come. It may be mentioned here as a curious illustration of the Wurtemberger's inherent tendency to emigrate, that of all those persons born in the kingdom and now living one-eighth part dwell in other lands.*

HOW EMIGRATION IS CONDUCTED.

Emigration in Wurtemberg is conducted under Government control by royal agents established at Stuttgart, Aalen, Heilbronn, and Calw, and by this means some record, though only an approximate one, is kept of the number leaving. During the month of January of the present year the German authorities officially registered 3,842 emigrants, of whom only 210 were reported from Wurtemberg, or less than the average. This is explained by the fact that a great many others betake themselves without registration to France, Belgium, or Holland, and there embark without regard to the restrictions imposed by the laws of their native kingdom. This renders an accurate official statement of the annual departures impossible, but the figures from the agencies will at least serve to indicate whether there is an increase or decrease as compared with the preceding year. I hope by June 30 to obtain from the various agents, nine in number, such statistics as will serve to indicate what the emigration is to be for the current year, and these I propose to transmit in a later report. For the present I make this report as giving an early indication of the large emigration which may be looked for from this section.

CAUSES OF EMIGRATION.

One great and never-failing cause of the emigration from Wurtemberg, in fact from all Germany, is the steady increase of population, and the preponderance of women and children who may be classed as consumers, and, practically, non-producers. In 1880 in a population of about

* Das Königreich Württemberg, Staatsrath Dr. v. Rümelin.

2,000,000 in Wurtemberg there were 67,918 more females than males, while minors constituted 36.1 per cent. of the whole population. About 60 per cent. were single persons, 33½ per cent. married, and the remainder widowed or divorced. As showing under these conditions the steady increase of population, I subjoin the following table of growth in various towns from 1861 to 1880, viz:

Town.	Population.		Increase.
	1861.	1880.	
			Per cent.
Stuttgart	61,314	117,908	90
Ulm	22,736	32,773	44
Heilbronn	14,333	24,446	70
Esslingen	15,059	20,758	38
Reutlingen	13,449	16,609	23
Cannstatt	7,414	16,205	11
Ludwigsburg	11,201	16,100	43
Gmund	8,298	13,774	66
Tübingen	8,708	11,739	34
Goppingen	6,762	10,851	60
Ravensburg	6,817	10,550	54
Hall	6,862	9,222	35
Tuttlingen	6,397	8,313	30
Biberach	5,723	7,799	36
Rottenburg	5,996	7,136	19

The German bureau of statistics announces that the population of the empire is increasing at nearly 1 per cent. per annum. Notwithstanding the heavy emigration in 1881 (206,189 to the United States alone) the excess of births over deaths was over 525,000. In a former report on "Emigration from Wurtemberg" (see Consular Reports No. 6, April, 1881), I showed that in this kingdom for five years past the excess of births over deaths had averaged 25,500 annually, or over 1 per cent. of the population. In order to understand that emigration is inevitable one has but to figure to himself what the results would be were the kingdom walled in so as to prevent all egress, and were this steady rate of increase in population allowed to go on within. In half a century, the forebodings of Malthus would be realized, and men would find themselves as thickly crowded together as cornstalks in a field. To avoid this, emigration is the healthful vent provided. This natural inclination to obtain a sustenance and to better his circumstances leads the able-bodied, industrious man to wander away from the crowd of weary toilers, and to spy out a better land which offers him a larger reward for his labor. America is that land—the El Dorado of the German peasant's dreams, the green oasis to which he longingly looks from out the narrow and circumscribed sphere in which birth has placed him. This is the cause of emigration; and so long as population increases, military service oppresses, and taxes weigh in Germany, so long will German emigrants hasten in an endlessly recruited procession to our shores. "But they are happy here at home," say the optimists. "Yes," I answer, "happy because they have never known better; but *what* a happiness, compared with that joy which comes to them with the freedom of life and ownership in our Western woods and prairies." Their bliss, if any they have here, is in their ignorance of the possibilities awaiting them there. And while we offer such great blessings to these men, we yet in return owe much to them or to their ancestors. Settlers from Wurtemberg peopled the rich regions along the Yadkin and the Broad. The valiant German troops from Virginia, whose services in the Revolution under General Muhlenberg are so highly and so often praised by

ncroft, were many of them from the banks of the Neckar. No other ction of Germany furnished so many soldiers to the Union Army in 1861 proportion to its population as did Wurtemberg. They have all proved od and true citizens, and we can only say, the more of such material e better.

HINDRANCES TO EMIGRATION.

The attempts to check this great movement or to divert it into other annels are numerous and determined. I regret that space does not rmit me to include in this report translations of some of the letters blished by various papers, written or purporting to be written by igrants lately arrived in America to their friends at home. Here, m a number of clippings before me, I choose one which is ironically ded "Für Auswanderungslustige." It gives letters written by two avers who emigrated last fall from Augsburg to New Bedford, Mass. e writes to his mother, the other to his wife, and both letters appear the "Augsburger Neuesten Nachrichten." One writes:

am living in New Bedford at the house of a German woman, and pay for board lodgings $17 per month, but splendid living, such as one does not get in Germany. can get beer here, but only in small bottles, and it costs 10 cents, or 40 pfennige, a good *schoppen* of it. There is only one Augsburg after all, and if there were a bridge over the Atlantic, I would lose no time in crossing it for home.

The other writes:

have been here since November 1, and haven't yet doné a stroke of work. It be months yet before I get any settled employment. I have already sought it ce in the four factories, but am always told to wait.

merely give these extracts as showing the impression which their blication is sought to give. Other published reports of a similar idency, one from New York and one from New Orleans, are before . Yet they do no great harm, for where one such unfavorable report nes, there are a hundred favorable ones from brothers and sisters, l cousins and friends, who have gone over and are doing well, and refore the rush keeps up just the same as before.

Another plan is the diversion of the stream to South American or ier colonies. There is a German colony at Montevideo, another in ili, another, and a quite numerous one, in Brazil; frequent attempts, , are made to induce German emigrants to go to Australia, and a ture was recently delivered here on "New Guinea as a field for trade l colonization." But these efforts practically amount to little. Of the),760 emigrants who embarked last year at Bremen and Hamburg 3,936 went to the United States, 627 to British America, 120 to Cen- l America, Mexico, and West Indies, 1,556 to Brazil, 1,317 to other rts of South America, 2,291 to Australia, 848 to Africa, and the bal- ce to points in Asia. Ninety-seven per cent. therefore of those who igrate from Germany go to the United States, and thither they will ntinue to go so long as we continue to offer them greater political, lustrial, and agricultural advantages than any other country on rth can offer. No lecturers, no colonization societies, no legislative en- ments are needed to guide the ever-moving throng toward our shores. long as brave hearts love freedom, and strong arms a worthy reward their toil, so long will the German emigrant turn his hopes and his tsteps toward that land where life, liberty, and the pursuit of happi- ss are guaranteed, as surely to the humble as to the high.

GEORGE L. CATLIN,
Consul.

UNITED STATES CONSULATE,
Stuttgart, April 11, 1884.

PRODUCTS AND COMMERCE OF LIBERIA.

REPORT BY CONSUL-GENERAL SMYTH, OF MONROVIA.

The duty, heretofore, of reporting Liberian trade and commerce has been performed more in a perfunctory manner than any other connected with my office, on account of the impossibility of procuring through the agency of Government such data as to exports, imports, and kindred statistics, as should be within its knowledge, and which by the Consular Regulations are required to be furnished by me.

To give a correct and satisfactory statement of the agricultural, manufacturing, mining, and commercial condition of the republic, figures as representatives of quantities and values would constitute the most satisfactory form of statement of facts, the absence of which necessarily takes something from the force an otherwise faithful and fair statement would have.

AGRICULTURAL PRODUCTS.

Experience has shown that Liberia is peculiarly adapted by its soil and the favorable climatic influences surrounding it to a very high condition of agricultural development. What, then, has been accomplished in that line here in sixty-two years towards such development? Comparatively little. And yet, in view of the means employed, and the ability of the immigrant population to contend successfully with the climate of a dense, primeval, tropical forest, the progress in this industry has been and is commendable, and particularly is this so when it is remembered that these people came here without money; and trade—barter with the aboriginal races—offered and gave immediate return for energy expended, while the fruits of tillage of the soil were postponed and were contingent.

LIBERIAN COFFEE AND SUGAR.

The staple products which are the result of cultivation now, and which yield a fair return to labor and to the State in revenue, are coffee and sugar, and yet for years the cultivation of these valuable commodities was not sufficiently understood by the people to the extent of making their production profitable. The yield of coffee and sugar during the year has been most satisfactory, more coffee having been exported to Germany, the United States, Holland, England, and France than during any previous year. The sugar exported to Germany, Holland, and the British settlement of Sierra Leone, and sold for home consumption, was by no means inconsiderable, the planters having sold largely. The prices at which sugar, molasses, and sirup are sold are as follows: At wholesale, sugar, $5.50 per 100 pounds; molasses and sirup, $3.33½ per 100 gallons; rum, 90 cents per gallon. At retail, sugar, 10 cents per pound; sirup and molasses, 50 cents per gallon; rum, $2 per gallon.

Coffee and sugar have advanced steadily in quantity and quality, and such improved methods of planting and cultivating have been resorted to as to enable these products to hold their place, and they will steadily increase in importance in proportion as larger quantities shall be exported, which will enable these products to acquire and maintain a status in foreign markets. While two crops of coffee may be gathered from the same trees in one year, the second crop being less in quantity than the first, yet to produce the first at least three years of careful tillage is necessary. And although a crop of sugar-cane may be pro-

luced from one cutting, planted during the first year, yet the gathering, grinding, and making sugar, sirup, molasses, and rum, where the planter hasn't his own machinery (and the majority of growers haven't machinery), make the profits less than otherwise, and in some instances there is loss rather than a fair return for labor. The cane after being planted and given ordinary attention will produce annually from the original planting for seven or eight years.

LIBERIAN RICE.

Rice, which is used generally as the bread of the country by both Liberians and aborigines, is capable of most abundant cultivation, and yet its growth is confined almost exclusively to the native races, and is consumed here, not a kroo (half bushel) being sent out of the country, except as a sample. The grain is large and of a reddish brown color, though by careful husking it can be made nearly white. It has more body than imported rice, and much more nutriment. The quantity raised during the year was so great that, so far as quantity was concerned, it was in competition with imported foreign rice. India and Carolina rices are imported, the former more largely than the latter, and the greater consumption of these is by the Liberians. South Carolina rice has been recently planted here, and the result has been very satisfactory, a larger grain being produced and a more nutritious food than in its home. The planting of rice has received some attention from Liberian farmers during the year, and the success attained from the Carolina rice may result in its cultivation to an appreciable extent.

LIBERIAN GINGER AND ARROWROOT.

The ginger and arrowroot cultivation has fallen off very much within the last eight years in consequence of the decline in prices. Ginger within this period has fallen from $10 per cwt. to $2 per cwt., and arrowroot has never had a status in the market. The qualtity of both these products has in no sense been inferior to that produced and exported from the neighboring colony of Sierra Leone.

BREADSTUFFS.

Breadstuffs, with the exception of wheat and cereals, requiring frost to aid in maturing them, and vegetables, have been cultivated to the measure of the needs of the people. Nothing cultivated for the purpose of food for man has suffered from insufficiency of rain, too excessive heat, nor from blight.

HABITS OF THE AGRICULTURISTS.

The merchant class here is neither large enough nor wealthy enough to make such advances as seem necessary to the majority of the farmer class before maturity of the crops to insure unhampered cultivation. It is equally true that constancy in industry, rigid frugality of habits, and rightful appreciation of the obligation of contract, are not generally characteristic of the farmer class. Time and a more enlightened civilization, increase of capital in the country, must be looked to as the corrective influences that are needed, and the helps required that Liberia may become the agricultural center of West Africa, the reflex influence of which may extend throughout the Niger Valley and to the heart of the West Soudan.

PALM OIL.

The non-cultivable staple articles of export, the fruit of the palm and rubber trees, may be here mentioned. The yield of the perennial oil palm has never been improved by cultivation; notwithstanding this there has been no appreciable diminution in the annual export of the oil and kernels. The supply of oil and kernels keeps pace with the demand. This may be accounted for in this way, that wherever and whenever a palm nut falls and lies undisturbed, a scion will most likely spring up. Palm forests which extend along the whole coast-line and some distance into the interior of Liberia seldom suffer in the destruction of the trees in any marked sense unless during tribal wars, when at times food becomes scarce, and, as a last resort, they are destroyed for the wine, and the heart or cabbage, which is a very excellent vegetable. The ruling prices of oil and kernels during the year has been 33⅓ cents per gallon, and from $1 to $1.25 per bushel.

THE RUBBER TREE.

The rubber tree and vine are indigenous, although their milky juice has only become an article of export within a comparatively short time, and this has been at a very great sacrifice, since it involved the destruction of the tree and the vine. The tree and the vine seem to be hardy, and if some means of taking the gum without immediate injury to the tree and vine could be hit upon, such, for example, as the boxing and cutting the bark of the trees, as is done in taking the substance from the pine trees in North Carolina, the cultivation of the rubber tree and vine would supply the growing demand abroad for their products, and would constitute a valuable return to labor. Rubber brought from 33⅓ to 36 cents per pound. At present the making of rubber, the bringing of it to market, and its barter, like the supply of palm oil and kernels and camwood, are wholly under the control of the untutored native races. It is to be hoped that in the interest of commerce civilized Liberians will give attention to this important product to the extent of applying the most approved methods in the cultivation of the tree and vine, so as to be able to possess its glutine substance and at the same time preserve the tree and vine, and thereby establish the industry, Liberian rubber.

THE COTTON TREE.

The cotton plant grows everywhere in the republic and attains the height and expansion of a tree, and possesses a more than ordinary vitality. The cotton produced in some instances is of as fine staple as the best cotton cultivated on the sea islands of South Carolina. This information has been given me by a native South Carolinian, who has been heretofore engaged in picking and sampling cotton, and my own personal observation of its growth is a convincing proof that its cultivation would be a source of great profit. Bedding and wraps of the native races are principally cotton. Cloths which they spin and weave constitute a very important industry and trade in Liberia and on the coast southeast from here; the cloths, wholesale, being from 50 cents to $2 each. They average from one to two and a half yards in width and vary in length. These cloths are dyed in blue, yellow, and brown colors.

IRON ORE IN LIBERIA.

I have found without any difficulty or careful search very fine specimens of iron ore on the surface at Cape Mount, on the seaboard, and at Carysburg, some 40 miles by waterway and land from Monrovia and about 25 miles from Grand Bassa. The specimens were estimated to contain at least 50 per cent. of pure iron. These specimens were shipped by one of Messrs. Yates & Porterfield's vessels to the Whitney Arms Company, at New Haven, Conn. There are deposits of almost pure iron near the banks of the river St. Paul, above the rapids, 20 miles east of Monrovia. These deposits continue to be found all the way to Musardu, the extent of furthest exploration, a distance 200 miles from the coast. Mr. Anderson, the Liberian explorer, in his Narrative of a Journey to Musardu, 1870, at pages 82 and 83, says in reference to his travel near Musardu:

> After a walk of a quarter of an hour, the road led through a district which was a solid mass of iron ore. A short reddish grass struggled for existence on this extensive plain of metal. The iron was so pure that the road leading through it was a polished metal pathway, smoothed over by the constant treading of the travelers; it is said to be hardly treadable in the dries; it becomes so thoroughly heated. We occupied three and a half hours in passing over these hills and plains of metal.

By reference to Johnston's Turner's Chemistry, page 349, History of Iron, the same region of Liberia here alluded to is mentioned as furnishing very pure iron.*

LIBERIAN GOLD DEPOSITS.

I have already advised the Department that from small findings here by Liberians and the crude rings of gold sold here by interior natives, from the proximity of the eastern part of Liberia to the Kong Mountains, from the earnestly expressed opinion of Commander Cameron—given me a few years ago as to the result of his observations of the coast formation of Liberia contiguous to the Gold Coast†—and from the interesting and instructive conversations had with Mr. Dazie, of California, first manager of the English mining interests at Axim, there can exist no reasonable doubt of the presence of rich gold deposits in Liberia, notwithstanding the fact that nothing has been done by Government nor individual effort toward mining, more than the passing of the mining act of 1869, anticipatory of mining effort, which gives foreigners an opportunity to engage in such effort.

LIBERIAN FISH AND FISHERIES.

There are abundantly rich fisheries extending from St. Ann Shoals to Cape Palmas, embracing the greater part of the coast-line of Liberia. The most common and numerous fish are the herring, mackerel, barakata, cavalla, gripper, mullet, snapper, homely, sole, whiting, sheepshead, pike, turtle, oyster, crab, and lobster. The mullet, perch of several varieties, drum, butter, gar, and cat fishes abound plentifully in all the fresh-water streams and lakes of Liberia. Here is a field for carrying on a profitable industry, if the fish were prepared for keeping by salting them, in view of the very great consumption of salt-fish by the

* From a letter addressed Eli Whitney, esq, of Whitney Arms Company, New Haven Conn., November 28, 1882, by Mr. Smyth.

† V. Love Cameron, S. S. Nubia, July 10, 1881.

Liberians, yet no successful and sustained effort in way of catching large quantities, and putting up the same for trade, has ever been carried on here. The primitive native method of preserving fish in small quantities by drying in the sun or over a slow fire is still followed. When fishermen are reminded that good livings and perhaps a fortune might be realized on fish, they uniformly say that fish cannot be put up here so as to keep as elsewhere; that they are without knowledge of the art of fish preservation.

LIBERIAN WOODS AND FORESTS.

Attention has been called heretofore to the valuable woods of the Liberian forests as known, and there are some specimens in the Department of Agriculture, the contribution of this consulate-general, and yet there are two products of the forest that deserve to be again mentioned, in view of the commercial importance which attaches to them, cam wood and rubber trees. The first has been alluded to in this report. Fears were entertained a few years ago that the cam-wood tree was disappearing, but recent discovery of forests of this valuable tree within 40 miles of Grand Bassa has allayed apprehensions of its decadence. The price of this wood is likely to increase, on account of the greater distance to be traveled to reach the market now than heretofore. As a dye-wood it promises to remain a steady source of trade and commerce so long as its need is not supplied by the laboratory.

The trade and commerce of Liberia, about which I am in position to furnish some authentic data, are subjects to which I respectfully call attention.

AMERICAN-LIBERIAN TRADE.

The commerce carried on between the United States and Liberia is small. This may be due to our large European, South American, and Asiatic trade; it may be on account of the indifference with which our merchants and manufacturers regard the trade of a country whose annual revenues do not exceed $200,000; it may result from ignorance of the present commercial importance of Liberia, and of its possibilities, its climate, its resources, and its proximity to that portion of Africa which is the objective point that all Europe is exercising praiseworthy zeal to reach by the most convenient land and water routes, for the purpose of further enriching itself by the exercising of a controlling commercial influence in Central Africa, in the West Soudan; or perhaps it may be due to the constant annual inflow of European immigrants, who contribute so largely toward the development of the great West, thereby increasing the wealth and importance of the United States.

Whatever the reason may be, the fact remains that we are without influence in the West and Central Africa. The thoughtful and considerate do not place an undue estimate upon the present; such live in the future as well. Nations, as individuals, should, with wise appreciation of the present, also live in the future. Great as our commerce is now, it is capable of being increased if there exists any accessible region of earth in which promised harvests may be reaped, and if, in entering such field, the welfare of humanity may be advanced, the duty is enjoined upon us to take an interest in it now, with a view to future happy contingencies; and if the benefits to be realized are to be reciprocal, then we may not unjustly be charged with want of tact and national foresight if we neglect the present opportunity offered to place ourselves such condition as to receive and share in them.

Our commerce is great and growing in many parts of the world, and s our States increase in population and the Territories become States, ith growing populations; as we expand nationally it will be necessary iat we levy tribute on West and Central Africa, and in contemplation f such contingency a base should be broadly laid for acquiring such iare in that trade as shall bear a proper relation to that indefinite anufacturing expansion of which our country is so capable.

If American capital be brought here, and if it be under the immedi-e control and direction of Americans, just as European capital here is nder the control of Europeans, then, through Liberia, America will, in ew of liberal legislation here, have such an opportunity to enter into id exercise an influence upon the agricultural, commercial, and in-istrial interests of Liberia as will be of mutual benefit to America and beria, and such other opportunity of entering Central Africa and of ercising control in the trade as would make the effort a paying one. iis immense advantage over European nations, who are putting forth great and so praiseworthy effort to enter this promised field of com-erce at the cost of great treasure, and too often the sacrifice of valu-le lives, can be easily obtained. What Europe seeks under very tent difficulties and obstacles America can compass without like ex-nditure of money, and without the fear of so great risk, and with as peful results. Our commodities were sold and bartered in Central frica as far back as 1851, cotton goods; this we have on the authority Barth. The barter was through the medium of foreign hands at second-nd. Shall America continue to subordinate itself commercially in frica during the nineteenth century?

Africa, West and Central, is not an El Dorado, nor are its Governments vilized and heathen-utopian ones, but there is much of known wealth its productions that the civilized foreign world needs and will ad-enture for, and who shall say how much there is of the unknown?

VESSELS ENTERED AND CLEARED.

The following table shows the number of vessels, domestic and for-gn, entered and cleared, and the amount of tonnage:

Flag.	Vessels entered.	Vessels cleared.	Tonnage entered.	Tonnage cleared.
berian	61	61	1,939	1,074
glish	56	55	99,670	98,116
rman	16	18	20,475	24,093
tch	20	15	4,494	3,414
merican	10	13	3,751	4,412
Total			130,329	131,109

One English naval vessel entered and cleared, and one United States aval vessel entered and cleared.

LIBERIAN EXPORTS AND IMPORTS.

The table below shows the kind and amount of exports sent to the Jnited States, with the exception of small amounts of products received y American vessels bound to the southeast, Gaboon, and which clear or home from that or some other southestern port.

Exports to the United States by American vessels.

Coffee, 155,396 pounds	$25,499 65
Camwood, 193½½½ tons	19,731 80
Liberian rubber, 2,341 pounds	776 83
Palm kernels, 615 bushels	34 34
Palm oil, 6,409 gallons	227 86
Yellow metal (old brass)	29 79
Duties paid	688 24
Total	46,988 40

The imports which paid an ad valorem duty were, in value, $330,868.47; the duty received by the Government on said valuation, $41,358.55. The imports which paid a specific duty, not valued, of $101,281.88. The exports paid a duty, specific, of $30,263.73.

SUMMARY.

Ad valorem duty on imports	$41,358 55
Specific duty on imports	101,281 88
Export duty on exports	30,263 73
Total amount of revenue received on exports and imports	172,904 16

Belgium and France export merchandise and provisions to Liberia; the former state is represented by the Société Belge Libérienne, but there are neither French nor Belgian vessels which come to the ports of Liberia. The merchandise from both these countries enters in English, German, and Dutch bottoms.

The value of the following-named articles and the duties received on their importation seem to be interesting:

	Duty.
Tobacco	$17,267 75
Cotton goods (value, $118,517.95)	14,814 74
Kerosene (value, $4,541.69)	567 69
Alcoholic liquors	51,681 37
Guns	10,568 00

The tables of statistics from which the foregoing is taken are as accurate as could be expected when it is remembered that nearly ten years have elapsed since any attempt has been made to keep an accurate record of imports and exports, &c. The quantities and kinds of articles have come into the state and paid the duties assessed, but what quantities in excess of the articles named it is impossible to determine.

The deficiencies of two prominent officials in Grand Bassa as to their accounts, if they were met, would increase the revenue for the year $25,000 or $30,000. Two counties have failed to pay any land tax to the state—Grand Bassa and Sinou.

LIBERIAN FINANCES.

With the very unsatisfactory and indefinite method that has been followed heretofore by the treasury department of Liberia of furnishing the legislature with what purported to be a report of the financial condition of the country, which, in round numbers, was the amount of revenue received, the amount disbursed (the disbursements always being in excess of the receipts), it is gratifying to have so full and fairly definite statement of commerce and trade.

The receipts of the Government have at no period within six years, until this fiscal year, reached $125,000.

The present receipts from imports and exports are $172,904.16; and from all other sources, $5,000.48; total, $177,904.64.

IMMIGRANTS AND IMMIGRATION.

Liberian is a generic national designation of all the inhabitants—not reign—resident within the territory of the republic of Liberia. But have an accurate notion of the people as they exist here, a subdivision must be made. Liberians consist of immigrants from the United tates and the West Indies (these are the most numerous civilized ass), and the descendants of these; the issue of the immigrants and ie aborigines; civilized aborigines who have taken up and improved nds, and thereby become citizens *de jure*, and their issue; aborigines ho have not availed themselves of the means of becoming citizens, ho may be denominated denizens, who are admitted by favor to all or part of the rights of citizenship, with this exception—that they are ative. In the absence of any census, approximate figures alone can e given as to the number of people in Liberia. Three-quarters of a illion would be a fair estimate of the aborigines; 12,000 Liberians of ie immigrant class, and their descendants, 500; the issue of immigrants nd aborigines, civilized aborigines, 5,000—total, 767,500 civilized and ncivilized people. The relation subsisting between these people is on ie whole friendly.

The arrogance of the immigrants, which caused them to regard themelves as natural superiors to the native races, and to regard them as opelessly inferior, and which gave the immigrants the fancied right treat the natives as inferiors in all their relations with them, has ndergone very great and marked change within the last decade, which ange is due to an increase of knowledge on the part of the immirants, a clearer consciousness of the interdependence between them nd the natives, an improvement on the part of the natives in intellience, manner of living, decrease of hostility between the native races, nd between the native races and the immigrants, as was practically own heretofore by engaging in wars, deaths of several powerful nave warrior chiefs, direct contact of Mohammedanism with heathenism, hich controls largely in West Africa by moral suasion rather than by ie sword. These combined influences have done much toward bringg closer together the immigrants and the natives. The success of is state is more dependent upon an increase and perpetuity of this mity between the classes than all else—the unity of the race.

The number of imigrants who have come to the republic within the scal year, 74. It may not be inopportune or out of place to say, in ie interest of the prospective immigrant and in the interest of Liberia, iat it is perhaps unwise for persons to emigrate here simply for the urpose of being free and enjoying complete civil liberty and social uality. The state is young, and though poor in *developed* resources, vigorous in purpose and effort, and needy only in additional influnces of civilization which are possessed by those who at their homes ave displayed the ability of independent labor and proprietorship. hat is to say, the man needed as an immigrant here is one who in his ome has industry and fixedness of purpose sufficient to cause him to ick at work of some kind until he has earned and saved enough to urchase a comfortable home, is competent to control it and does conol it; or a man who has entered upon a business and has self-denial ough to continue in it to the extent of respectably supporting himself nd family, or who has made himself a boss of some supporting trade; man who is not directly dependent upon being a common servant, nd who is not an ignorant laborer, incapable of turning up something om his innate good sense and the God-given push within him; the

man really *learned* not merely bookish. Liberia possesses no large class of citizens who need or who are able to employ a servant class from a foreign country. Intelligent laborers are needed, not ignorant ones. The constitution of this republic guarantees to each immigrant so much cultivable land. The purpose of such grant is obvious; the improvement of it, the means of supporting one's self from the soil, is the consideration for the gift, thereby winning from forest and jungle valued lands capable of indefinite production, and winning from ignorance the native races by pursuit of the arts of peace. Such results can be obtained alone through intelligent, persistent industry.

All agricultural labor, all coast labor, loading and unloading vessels and fishing, all house service, are carried on—in the general—by aborigines. Farm labor is worth from $2.50 to $4 per month exclusive of housing and feeding. This is paid principally in goods, or one-half goods and the other half in money. Where this labor is well fed, and treated well, it is honest and reliable—where these conditions are met there is no lack of it. The labor performed by the citizen class is farm proprietorship, trader, merchant, mechanic, professional, and governmental. There is a minority of farm laborers of the civilized Liberian class.

A clear understanding of the conditions of labor here is important to that class of foreign negroes who contemplate settlement here. The possession of a few hundred dollars, skill in labor, and executive ability constitute a capital that cannot but secure a most comfortable living here—with a probability of wealth.

BARTER TRADE.

All trade relations between the uncivilized races and the civilized people is by barter. The retail prices of food, clothing for women, and fuel for light may be found in the following summary: Flour per pound, 10 cents; bacon, 20 cents; meal, 8 cents; pork (salt), 20 cents; American hams, 25 and 30 cents; English and German hams, 45 to 50 cents; beef (salt), American, 20 cents; butter, 80 cents; lard, 30 cents; hake-fish, 10 cents; mackerel (salt), 6 cents apiece; alewives, 3 cents each; herrings (smoked, in boxes), 50 cents per box; rice (imported), 50 cents per gallon or $4 per bushel; rice (domestic), 25 cents per gallon or $1.50 per bushel; beans, 16 cents per quart; pork (domestic, fresh), 16 cents per pound; beef (fresh), from 14 to 16 cents; venison (fresh), 12 cents per pound; mutton (fresh), 12 cents; fish (fresh), 6 cents per pound; kerosene, 16 cents per quart; calico for dresses, from 16 to 20 cents per yard; other fabrics for women, from 25 cents to $1.50 per yard; plain white cloth, from 16 to 20 cents per yard; chickens, 30 and 50 cents per pair; puddle and muscovy ducks, 30 and 50 cents apiece; turkeys, $1.50 to $2.50 each; luxury (tobacco), 40 cents per pound.

The influences of the immigrant Liberian, of the Christian missionaries, foreign and home, and Mohammedan missionaries have done much toward inducing the native races to tread the paths of trade, thereby increasing from year to year the volume of exports, and creating in those races the needs of civilization which have made them augment their purchases of foreign stuffs and manufactures.

WRITTEN LANGUAGE AMONG THE NEGRO TRIBES.

There does not exist any purely pagan or idolatrous race within the republic, nor any really barbarous people, so far as known. Further, there is not, perhaps, a single tribe within 200 miles of the seaboard

among whose people there are not persons who can understand and speak, imperfectly though it may be, the English language, and all the races who carry on trade with the civilized people seem keenly appreciative of the importance of trade and intelligently to comprehend the obligations of trade contracts. The Liberians' contact and the missionaries' relations with the natives have had a very salutary effect upon them. There are at present five white American missionaries at work here, four among the aborigines and one among the Liberians. There are eight Liberians directly engaged in the good work. These laborers, who are among the Greybo and Vey races, seem to have accomplished more, so far as drawing out the native talent of these races, than those among the other native races. This, perhaps, is due to no superior effort on the part of the missionaries to these people, but rather to the fact that the intellectual soil is in better condition for cultivation among these than among other races. The Vey people have a written language, and the Greybo people have, through the agency of the American Episcopal Mission, had a grammar of their language prepared, and have books printed in their own vernacular.

By reference to a work entitled Dahomey and Dahomeans, by Frederick E. Forbes, Commander R. N., F. R. G. S., discoverer of the Vehie Phonetic, &c., vol. 1, pages 196–198, the fact will be established that Commander Forbes, in a letter dated on board H. M. S. Bonetta, Sierra Leone, January 18, 1849, informs the acting governor of Sierra Leone of the discovery of a negro race possessing a written language originated by themselves, of the phonetic order.

But notwithstanding their extraordinary number and variety [negro languages], it would be a mistake to suppose these negrite idioms are merely rude jargons, the disjointed, discordant utterances of beings scarcely deserving to be admitted into membership with the human family, and altogether beneath the notice of the philosopher and the historian. Many of them are, on the contrary, characterized by marvelous delicacy of structure, and have been developed with amazing uniformity on fundamental principles, consistently operating throughout the whole of their national growth. Such, for instance, is the language of the Veiese, an obscure tribe, at present occupying a small strip of the west coast between Liberia on the south, and the totally distinct tribe of the Kerim on the north.

Though usually classified in some vague way with the widely diffused Manding group, the Vehie tongue has really no apparent well-defined affinity with any other known form of speech. Although the only negrite idiom boasting of an *original writing system*, it has been cultivated only in recent times for missionary purposes, mainly by E. Noris and the Rev. S. W. Kœlle. Yet it is a perfectly-formed language, with many intricate and beautiful laws, especially of harmony, instinctively and unerringly adhered to by the untutored natives for an unknown number of generations. It is doubtless rather a pretty, modest little wild flower than a gorgeous hot-house specimen, yet, such as it is, it presents some of the profoundest linguistic problems to the scientific student. Thus it belongs, no doubt, on the whole, to the agglutinating order, yet it is on the one hand almost as utterly devoid of inflection of any sort as is the Chinese or any other isolating tongue, and on the other allies itself with the American language, through the remarkable tendency it has developed towards true polysynthesis. *

Now, an attention to the principles laid down in the Vei grammar will doubtless enable the reader to see what has often struck me during the study of the language, viz., that a number of Vei roots are identical or cognate with Indo-European and Semitic roots. * * * The lingual world is just beginning to point out that the grammar of the negro languages betrays the same rational principles, the same general laws, the same regularity and organism of structure, as the grammar of other languages. Can we be surprised if we find a corresponding comprehensiveness in the vocabulary, and even the same affinity in the roots? * * * Besides this radical and general affinity of the Vei with European, Asiatic, and African languages, it also stands in a more particular and immediate relationship with a number of African languages, with which it forms a common stock or family—the Mande family. For

* Stanford's Compendium of Geography and Travel, Africa, edited and extended by Keith Johnston, F. R. G. S.

an illustration of this closer or family connection of the Vei language, refer to the "Polyglotta Africana." *

The foregoing statement as to the Vei language must be taken as more conclusive than those which precede it.

"Were," says Archbishop Trench, "the savage the primitive man, we should then find the savage tribes furnished, scantily enough it might be, with the elements of speech, yet at the same time with its fruitful beginnings, its vigorous and healthful germs. But what does their language on close inspection prove? In every case what they are themselves, the remnant and ruin of a better and nobler past. Fearful indeed is the impress of degradation which is stamped on the language of the savage—more fearful, perhaps, even than that which is stamped upon his form." Yet, whatever may be the case with some tribes, who may be shown historically to have fallen from a higher state (and such are the exceptions), at least the languages spoken in Africa bear no such fearful impress of degradation as are declared to be traceable *in every case*, if we may judge of language by the thoughts which it expresses rather than by the words which it contains.†

AMERICAN INTERESTS IN WEST AND CENTRAL AFRICA.

Liberia has been visited within the year by one of our naval ships, the Quinnebaug, which remained on the coast but a short time. From geographical and political considerations it is a source of regret that the commander did not find it convenient to explore the Mannah River so that its source and direction and length might have been determined before the ratification of the convention between Great Britain and Liberia, which will constitute it the northwest boundary of the republic.

The Cavalla River, perhaps the most important water-course in Liberia, which I some time since reported to have been ascended nearly 200 miles must on careful exploration be found to be of very great trade and commercial interest, gold-washings having been already found on its banks. It would have been well had this river been ascended by naval officers. The advantage attendant upon ascending these rivers and examining the adjacent interior country by competent men—men of scientific training—would be two fold: An extension of geographical knowledge of West Africa, in which science, commerce, and philanthropy are interested, and it would be rendering Liberia such scientific aid as she may not unaided *now* acquire. But there is a small but persistent American commerce being carried on along the west coast as far as Gaboon, which one or two of our naval vessels would give confidence to by their presence along this sea-coast.

The interest manifested by the United States in West and Central Africa, I submit with very great deference, is not commensurate with the claims that Africa has upon America, in view of America's high civilization and wealth as a Christian nation, nor is the interest taken in Africa in contemplation of our expectant need of it as a market for the direct sale of our manufactures, nor in and of the growth of Liberia commensurate with the special claim this portion of Africa has upon the United States for its sympathy.

THE VALLEY OF THE CAYO.

In the same connection, I submit the following from the first and most reliable of European newspapers:

But General Gordon, if not a diplomat, is an administrator of the first order, and it is in that character that his services are wanted on the Congo. His sympathies have already been enlisted in the cause of those hopeless blacks who, whether they have

* Grammar of the Vei Language, by S. W. Kœlle, Church missionary. London, 1854, page 4.

† Primitive Manners and Customs, by James A. Farrer. London, 1879.

suffered in the Soudan from oppression, or on the west coast from ignorance, have many *claims* on the assistance of the more fortunate and advanced races of Europe.*

But there is an authority high in himself, and highest in the estimation of the American people, his countrymen, that has expressed in a singularly happy manner, an interest in another portion of West Africa, and has urged upon the Congress of the United States to take an interest in the Congo; and who is in full sympathy with every legitimate effort of the citizen and the nation which will tend to strenthen the bond of friendship between our Government and that of the republic of Liberia, and which will tend toward the development of the resources of Liberia, and which will increase the commerce between us, and which will aid in making of the republic a stable and prosperous negro state.

The rich and populous valley of the Congo is being opened to commerce by a society called the International African Association, of which the King of the Belgians is president and a citizen of the United States the chief executive officer. Large tracts of territory have been ceded to the association by native chiefs, roads have been opened, steamboats placed on the river, and the nuclei of states established at twenty-two stations under one flag which offers freedom to commerce and *prohibits the slave-trade.* The objects of the society are philanthropic. It does not aim at permanent political control, but seeks the neutrality of the valley. The United States cannot be indifferent to this work nor to the interest of their citizens involved in it. It may become advisable for us to co-operate with other commercial powers in promoting the rights of trade and residence in the Congo Valley, free from the interference or political control of any one nation.†

JOHN H. SMYTH,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Monrovia, February 21, 1883.

THE TRANSPORTATION QUESTION IN MANITOBA.

REPORT BY CONSUL TAYLOR, OF WINNIPEG.

In my annual commercial report I estimated that the surplus of wheat for exportation from the Province of Manitoba, which was confidently anticipated as 2,500,000 bushels, would be reduced, in consequence of the misfortune of frost on the 7th of September, to one million of bushels, while the reduction in value of the crop by low prices and partial injury from frost would deprive the farmers of any appreciable profit. This condition of things existing also in the upper valley of the Red River of the North, south of the international frontier, there arose in Manitoba and the adjoining districts of Minnesota and Dakota a great agitation for relief from existing rates of transportation and methods of determining the grades and values of grain at railway stations.

Conventions of farmers were assembled at Grand Forks, Dak., and Winnipeg, Manitoba; their complaints formulated and deputations appointed to confer with the officers of the Saint Paul, Minneapolis and Manitoba Railroad for redress of grievances in Minnesota and Dakota, and of the Canadian Pacific Railway for the same object in Manitoba and the Northwest Territory of Canada. Waiving details I will state that such arrangements have been effected as have satisfied the farmers in respect to railway rates and facilities.

More serious issues relating to the policy of the Dominion Government, still await adjustment in Manitoba.

(1). There is great complaint in regard to what is called the "monopoly clause" of the Canadian Pacific charter, prohibiting future branch

* Chinese Gordon and Congo. The Times, weekly edition, January 11, 1884.

† Message of the President of the United States to the Forty-eighth Congress, p. 7. Washington, D. C., 1883.

lines except in directions southwest of the main line and to a distance of 15 miles from the frontier, for a period of twenty years. The Canadian Pacific Railway Company, finding a proposed 3 per cent. guarantee by the Government inadequate to float its 5 per cent. stock, had applied for a Government 5 per cent. loan of thirty millions secured until maturity in 1891, by mortgage of all its assets, and it was contended very persistently as a condition of such aid that the barrier to the access of American lines should be relinquished. This demand has so far been conceded that the minister of railways announced, on behalf of the Government and the railway, that the obnoxious obstruction to competing lines from the south would be relinquished on the completion of the Canadian Pacific Railway, which it is supposed will be accomplished within three years or during the summer of 1886. As that period will be required for the leading Western lines (other than the Saint Paul, Minneapolis and Manitoba Railroads) to penetrate Northern Minnesota and Dakota and reach the frontier, the above concession would seem to be satisfactory to all interests.

(2.) Upon the most substantial of all grievances—the Canadian tariff of 35 per cent. on agricultural implements and other indispensable supplies of an agricultural settler—there seems no prospect of relief. The Dominion Government is committed to a protective tariff, and having only a year since advanced their rates from 25 to 35 per cent. to exclude competition from the United States, a differential duty or a special free list in the interest of Manitoba is pronounced by the Canadian premier to be wholly inadmissible. Herein is the greatest discrimination to the disadvantage of the Manitoba farmer, as compared with his Minnesota or Dakota neighbor, which has been frequently estimated by speakers at farmers' conventions as 25 per cent. on the value of the year's crop. It was with special reference to this fiscal burden that I referred in my report of November 15, to "very significant demonstrations in favor of more liberal relations of trade and transportation with the United States," and expressed the opinion that "no measure would be received in this community with greater enthusiasm than an announcement that the Governments at Washington and Ottawa had concurred in the appointment of commissioners to determine the possibility and to frame the articles of a commercial union between the United States and Canada."

(3.) There are important domestic questions connected with the financial situation of the provincial government of Manitoba—a claim to the public domain and an increased subsidy in lieu of the surrender of the power hitherto possessed by the provinces to levy customs duties.

(4.) Mr. Norquay seeks from the Dominion Government an extension of the northern border of the province of Manitoba to latitude 60°, so as to include the ports of Nelson and Churchill, in Hudson's Bay; and there is no subject so engrossing and expressive of the determination of the community to secure competing routes to the European market, than a project to build a railway to Hudson's Bay at a cost of $15,000,000 to $20,000,000 under provincial auspices.

The enthusiasm in this direction even extends to the adjacent territory of Dakota. A delegation from the Winnipeg Board of Trade presented the scheme at the farmers' convention at Grand Forks, and were very warmly received, and an international convention in favor of the Hudson's Bay route is called at Emerson, Manitoba, on the 15th of March. I have reason to believe that the Ottawa Government, while not antagonizing the measure, would prefer to hold it in reserve until the Canadian Pacific Railway is in full operation, and until the settle-

ment of the Territories of Saskatchewan and Athabasca, due west of Ports Nelson and Churchill, would demand the construction of an inter-oceanic railway near latitude 60°, as a natural necessity to be undertaken under the auspices of the confederation.

With this view an expedition to determine beyond all reasonable doubt the feasibility of a commercial route through Hudson's Straits will be dispatched, and ample opportunity afforded to organize the enterprise under charters of the Dominion.

JAMES W. TAYLOR,
Consul.

UNITED STATES CONSULATE,
Winnipeg, February 28, 1884.

TRADE OF THE SOUTH SEA ISLANDS.

REPORT BY CONSUL CANISIUS, OF APIA, SAMOA.

Having at length obtained statistics of German trade with the South Sea Islands, I now submit what forms the principal part of a commercial report from this office.

The following table exhibits the total commerce of Germany in this part of the South Pacific during the year 1883:

Number of ships arrived	92
Tonnage	19,296.69
Value of imports	$247,793 00
Value of exports	$698,274 90

Of the above $247,793 worth of goods imported, $179,059 worth were re-exported from Apia to Tonga and other South Sea Islands, leaving only $68,734 worth to be consumed in Samoa. Of the $698,274.90 worth of South Sea produce exported, $443,803.20 worth was from Tonga and other islands, and $254,471.70 from the Samoan group.

By this it will be seen that Samoa, in spite of her greater size and fertile soil, is still considerably behind Tonga.

During this year the Germans imported $44,000 in coin (Chili and Bolivia silver, known here as "iron money"), and of this $43,000 went to Tonga to pay for copra.

The entire trade of Samoa, Tonga, and other islands in this neighborhood may be stated as follows, for the year 1883:

Nationality.	No. of ships arrived.	Tonnage.	Imports.	Exports.
Germany	*97	21,182.69	$247,793 00	$698,274 90
American	18	2,776.72	130,731 65	†14,000 00
British	36	3,799.25	45,515 00	5,900 00
Total	151	27,758.66	424,039 65	718,174 90
Preceding year	147	26,948.06	303,931 00	693,969 70
Increase	4	810.60	120,108 65	24,205 20

* Including 1 Austrian, 1 Norwegian, and 3 Tongan. † Estimated.

The above figures are as accurate as can be made in the present state of the country, for, as there are no custom-houses or other official sources of information established by the Samoan Government, the foreign consuls have to depend upon one another and the courtesy of merchants for it.

The imports are probably placed a little too low, for there are some articles, such as arms and munitions of war, which are often imported clandestinely. The increase in the exports is not proportionately large, which may be attributed in part to the hurricane which passed over this group early in the year, seriously injuring the cocoa-nut crop.

According to the above the American merchants at Apia imported a little more than half as much as the Germans. This I consider very encouraging, for it is not so long ago that the Germans enjoyed almost a monopoly of the trade of the South Sea Islands.

The following table shows the articles exported, with their respective values, during 1883:

Copra	$647,638 90
Cotton	70,249 00
Turtle-shell	287 00
Total	718,174 90

THEODORE CANISIUS,
Consul.

UNITED STATES CONSULATE,
Apia, February 14, 1884.

PALM-NUT OIL OF MEXICO.

REPORT BY CONSUL LAMBERT, OF SAN BLAS.

The product of this valuable nut is known in commerce under the different names of cocoa-nut oil, copra oil and coquito oil, the latter translated into Spanish being the name by which it is called in this country.

It grows on a tree very much resembling the cocoa-nut, but not so high, and the fruit hangs in large bunches, like young bananas. The natives eat it both raw and baked, and it is said to be palatable.

The tree is found in all tropical countries, but the oil extracted from the nut grown in this locality seems to possess unusual qualities. It is used among the natives universally for all kind of lighting, as well as lubricating all kinds of machinery. There is no use to which oil can be put that is not occupied by this product.

All along the coast southward, and extending some distance inland, the palm-nut tree grows wild and in luxurious abundance. The nut is incased in a husky fiber covering, shaped exactly like the cocoa-nut; hence its name. It varies in size from the pecan up to a fair-sized pullet's egg, and the meat contains over 60 per cent. of pure oil.

The primitive method of extracting the oil here consists in first cracking each nut by hand; then separating the shell from the kernel; the kernel is then roasted in an oven to evaporate the water; it is then ground in a large-sized mill resembling our old-fashioned coffee-mills, sometimes by mule-power; the pulp is then put into a kettle of boiling water, and during the process of boiling, the oil is skimmed off, put into earthen jars, thence taken to market on pack-mules without further preparation.

The average market price is $2.50 per arroba of 25 pounds, which is a trifle over four gallons, making it worth about 62½ cents per gallon.

PALM-NUT OIL AS A LUBRICANT.

Those who have had experience here inform me that for lubricating purposes it cannot be surpassed, for the reason that it does not gum nor waste; neither does friction remove it readily from surfaces where applied, and its use is exceedingly economical. There are looms in a cotton-mill at Tepia which have been running regularly, until a year ago, since 1838, and the only lubricating oil they ever had was the local production.

The costly cylinder oil now used on all valuable machinery, which brings about three times the price in the United States that this does here, appears to be no better in results, while the price is greatly in favor of the coquito.

The greatest and principal need to make this oil project successful is to invent some automatic, self-adjusting, machine to crack properly the varied sized nuts and separate them from the kernel cleanly. It appears that if a small particle of the shell remains with the kernel, immediate rancidity takes place during the future process of separating. The extraction, purification, and handling of oils being so thoroughly understood by persons engaged in the business this great danger from rancidity cannot be considered an obstacle.

There are, however, other conditions which enter to a great extent into the practicability of inaugurating an enterprise of that or even any other kind of business in this country which so closely reaches the masses.

On account of the universal use of this oil among the entire people it has developed into one of the settled industries. The method of its manufacture and sale, however primitive it appears to us, nevertheless embraces certain crude commercial entanglements in their system of procuring the nuts and delivering them to the manufacturers of oil at the different localities.

During the month of September in each year the entire coquito-growing country is arbitrarily districted by "bosses," as we call them, regardless entirely of the ownership of the soil on which the trees grow—something after the habit of the Chinese companies who establish laundry districts throughout the large cities of the United States. These bosses employ men to gather the different crops and contract with the different manufacturers for their delivery each season. Consequently, if a company should buy a hacienda of 50 miles or more he will find that his entire coquito crop has been contracted for in advance, and there is practically no way of preventing the delivery in those districts where the nuts grow the thickest.

To remedy this evil one would have to contract with these same bosses to get them to deliver him his own nuts a season in advance, then take the chances for future seasons.

The original outlay would be unimportant in establishing this business, the necessary cracking machine being the important factor; the remainder depends entirely upon the capacity of the parties themselves to manage the natives and successfully conduct their own affairs, a knowledge of the language being necessary.

Frequent shipments of the coquito-nut are made to San Francisco, but local consumption heretofore seems to take all that the natives care about handling.

Several abortive attempts have been made to establish this business at San Blas, but no proper machinery has yet arrived nor intelligent management exhibited. With a capital of, say, $5,000, in machinery

and surplus, to be located convenient to where a large quantity of the nuts grow, with contracts for certain delivery of a given quantity of nuts every season, a profitable industry could be built up.

The reciprocity treaty with Mexico just ratified admits petroleum free. This article has heretofore borne a proscriptive duty on the Mexican tariff list of 32 cents per gallon. The operation of the treaty will doubtless create a larger demand for petroleum in this consular district on account of its cheapness and superiority over coquito oil for lighting. It will correspondingly lessen the demand for, and price of, coquito-nuts, thereby opening up an exclusive field for manufacturing a cheap lubricating oil of superior quality. Its superiority as a lubricant is universally admitted by persons who have practically tested it, and there is no duty imposed by our tariff upon its admission into the United States. Next to tobacco-raising this offers a good opportunity for quick returns and fair profit on a small capital. Considerable fortunes have already been made here in the coquito-oil manufacture for local consumption.

RICHARD LAMBERT,
Consul.

UNITED STATES CONSULATE,
San Blas, Mexico, April 30, 1884.

MEXICAN OYSTERS.

REPORT BY CONSUL LAMBERT, OF SAN BLAS.

These popular bivalves are found plentifully distributed along the entire coast of Northwestern Mexico. Especially so can it be remarked of this immediate locality. All along the banks and bed of an appropriately named estero, situated about 2 miles south of San Blas, called "El Conchal," they are found in quantities sufficient to supply the city of San Francisco.

These oysters can be had for the simple taking, and at this season of the year they are large, fat, and tender, and will compare favorably with those found along the Chesapeake and Delaware Bays.

Notwithstanding the ease of obtaining, and the inexpensive price—about 25 cents a bushel—not many are brought into town, except rare cases on Friday. Generally speaking, any one who wants oysters either orders them privately or sends his servant to the Conchal with a basket, where they are easily gathered from the roots of trees skirting its banks.

There are no ownerships to the oyster-beds yet—everything is free—which fact, taken in connection with the habits of the people generally, may partially account for the manifest lack of enterprise exhibited by the natives of the country in this line.

Some years ago parties came down from San Francisco having in view the establishment of an oyster-canning factory at this point, but the proposition was abandoned.

Considering the climate, I hardly believe an enterprise of that kind would be a success, for the simple reason that nothing will keep here over twenty-four hours. Fresh fish, which are even as plentiful, and obtained with much novelty as well as ease in the majority of cases, cannot be relied upon keeping twelve hours, even when caught with the hook

r spear. The use of ice, which would be exceedingly expensive, might bviate the difficulty, but I think not.

In view of the fact that the Eastern oyster does not propagate when lanted in the Bay of San Francisco, I would regard very favorably an nterprise to load vessels here with oysters to be shipped to San Fransco for breeding purposes. It is a native of Pacific waters, and ineases remarkably here; therefore their propagation and improvement ith a larger and clearer field only awaits the trial.

At the rates Eastern oysters are held in the California markets it ould seem to justify the experiment, for there could not possibly be nch, if any, loss should they fail to increase after planting. With the periment a success, it would meet a great public want, for the Eastern ster is sold at almost proscriptive prices in California.

RICHARD LAMBERT,
Consul.

UNITED STATES CONSULATE,
San Blas, Mexico, April 30, 1884.

FROZEN MEAT FROM THE RIVER PLATE.

REPORT BY CONSUL BAKER, OF BUENOS AYRES.

The problem of shipping fresh meat in frozen carcasses to Europe has or a long time been a prominent one in the countries of the river Plate, hose principal industry is the raising of sheep and horned cattle; and arious attempts during the last few years have been made to solve it, nder different systems of freezing, but never with complete success. ast year, however, a number of gentlemen resident in London, but well quainted with the resources of this country, organized the "River late Meat Company," with adequate capital to undertake the business a large scale, under what is known as the "Haslam refrigerating maachinery."* As a prelude to the commencement of operations, the comany at once proceeded to purchase extensive inclosures and to erect rge and well-arranged slaughter-houses, with the requisite freezing mpartments, at Compana, on the Paraná River, about 30 miles above uenos Ayres. Active operations were commenced last November, and January the first shipment of sheep carcasses was made to London in e steamer Meath, especially fitted up with the refrigerating compartents. The invoice consisted of seven thousand carcasses. From the counts which have thus far come back to Buenos Ayres, the shipment rived in admirable condition, and was finding a ready sale, at paying tes. The following, in reference to the cargo, is from the London Telraph of February 16:

Little has been heard of the movements of the River Plate Fresh Meat Company til within the last week or two, when the arrival of 7,000 frozen sheep by the eamer Meath were exposed for sale in the Central Market, Farringdon street, and e-half, we understand, disposed of at fair prices. The meat was in fine condition, d will be better known shortly. Another cargo is expected in about a month. The periment will be watched with interest by the public on this side, as well as by eep farmers in the Plate, who, in the event of a successful issue, can supply any antity. On the 12th inst., at the invitation of the directors, a number of gentlemen nnected with South America, including Señor Garcia, the minister of the Argentine nfederation, and Colonel Carve, minister for Uruguay, partook of a luncheon at

* I understand this company has the exclusive control of the Haslam patent in the rgentine Republic.

their offices in Finsbury-circus, when samples of the mutton brought over by the company were served up in a variety of dishes. The mutton, which is rather small, was pronounced to be very similar in all respects to that which has already been brought over from Australia and New Zealand by the same refrigerating machinery—that of Messrs. Haslam & Co., of Derby, and which by this time is well known in the London market. This first consignment from South America consists of 300 tons, and has been brought in one of Messrs. Houlder Brothers' steamers, specially fitted with the freezing machinery. The chairman of the company, Mr. Drabble, in proposing the health of the foreign ministers present, pointed out with regard to the sources of meat supply which they were opening up that there were in the province of Buenos Ayres alone something like 150,000,000 of acres of pasture lands, with nearly 70,000,000 of sheep, while in the whole of the Argentine Confederation there were upwards of 85,000,000 sheep. This was exclusive of Uruguay, where there are 15,000,000 of sheep. The horned cattle in the two countries besides exceeded 22,000,000. Señor Garcia, on behalf of his fellow-countrymen, acknowledged their indebtedness to English capitalists, instancing the construction of the railways in the Argentine Confederation, and expressing his gratification that confidence was thus shown in them. It is understood that arrangements have been made by which a large consignment of the frozen meat will be received in London every month.

Subsequent advices state the principal objection raised against the meat was the size of the carcasses, which are much smaller than those from the half-bred sheep of Australia and New Zealand, the average size of which sent in the same way to the London market is stated to be about 70 pounds, while that of the river Plate shipments is not more than 35 to 38 pounds. This it is claimed is too small for the present taste in England, whose people are accustomed to legs of mutton weighing 10 or 12 pounds, whereas those of the river Plate only weigh 5 or 6 pounds. This, however, seems to be only a matter of fancy; and, if the meat is good in other respects, the question of weight in the end will not signify much.

It is probable, however, that the river Plate mutton will have to suffer a direct and sharp competition not only from the United States, which already are doing an immense business in the export of frozen meats, but also from Australia and New Zealand, which have recently entered the trade with encouraging prospects.

In regard to the price of river Plate mutton, I am informed that at last accounts it was selling in London at 4*d.* to 4½*d.* per pound.

The total expense of putting it in the refrigerating stores of London, ready for sale, is further stated to be 3½*d.* per pound. If this also includes the first cost of the sheep, the selling price of the meat would leave a very handsome margin for profits, to say nothing of the sale of the skins, tallow, &c.

Before, however, it can be definitely known what are the actual figures at which river Plate mutton can be put down in the London market it will require more experience in the business than the company have yet acquired. But should the present venture prove successful there is hardly a limit to the amount of frozen mutton which can be shipped from the ports of the river Plate. Cattle, also, whose carcasses are now only utilized in the *saladero* establishments, will in all probability find a market in England under the freezing process.*

* In a late number of the London Economist I find a communication, from which I extract the following:

"At present the importations of frozen mutton are fourfold in character: (*a*) from New Zealand, desirable cross-bred and kindred sheep, weighing from 65 to 75 pounds per carcass; (*b*) from Victoria, suitable sheep of a like stamp, but not quite so profitable to the butcher; (*c*) from New South Wales, lighter sheep, chiefly of merino type, weighing from 45 to 60 pounds each, and (*d*) from the river Plate, merino sheep, averaging from 38 to 50 pounds each. In order that the frozen-meat trade should be successfully built up, the following desiderata are necessary: Regularity and uniformity of supply, excellence of quality, dissemination through the regular channels of consumption, and to this end speedy and secure transit facilities from dock refrigerating chambers to provincial markets."

The only present drawback to the trade will probably be the difficulty of procuring animals properly fattened. It is evident that the carcasses of animals which have been fed entirely on the green pasturage of the pampas, however well they may suit the market of Buenos Ayres, will scarcely answer the purpose for extended and protracted transportation, since the meat is so soft and watery that it would become greatly reduced in bulk before it reached the consumer. The stall-feeding, which is usual in the United States and in England, is at present never employed in the Argentine Republic. Cattle here are never fed with dry food.

Until a system of fattening different from that which is now in vogue here shall be adopted I doubt if there will be any great competition in the English markets between the meats sent from the river Plate and those sent from the United States, though the former may find a ready sale at lower rates.

E. L. BAKER,
Consul.

UNITED STATES CONSULATE,
Buenos Ayres, March 20, 1884.

EXPORT OF SILK GOODS TO THE UNITED STATES.

REPORT BY CONSUL-GENERAL VOGELER.

I have obtained from a reliable source a comparative statement of the exports of silk, half-silk, velvet, and plush goods and ribbons from the leading German, French, and Swiss manufacturing places to the United States during the last five years, which is of general interest. It shows that during said five years the exports of the class of goods mentioned reached the highest point in 1882, a point which, except in some instances, was not attained again in 1883. A gradual decrease of exports will be observed in the case of Zurich. The figures are given in American dollars.

SILK AND HALF-SILK GOODS AND VELVETS.

	1879.	1880.	1881.	1882.	1883.
Crefeld	$2,429,037	$2,884,560	$2,987,337	$4,149,644	$3,745,713
Barmen and Elberfeld	594,075	551,007	333,643	1,013,656	571,444
Lyons	7,248,074	10,034,488	9,599,671	10,553,448	8,696,952
Zurich	5,028,060	4,532,376	4,232,874	3,243,275	2,489,442
Bâale	188,908	211,619	108,017	97,661	214,790
Cologne	332,184	427,419	.....	.....	376,487
St. Etienne	.....	.....	8,785	1,319	5,898

Of silk and half-silk ribbons Crefeld has exported but small quantities, and has been unable in 1883 to reach the figures of preceding years. St. Etienne shows a marked decrease since 1880.

SILK AND HALF-SILK RIBBONS.

	1879.	1880.	1881.	1882.	1883.
Crefeld	$75,912	$154,863	$44,482	$47,545	$22,797
Barmen and Elberfeld	641,605	1,291,852	370,794	980,076	823,722
Lyons	30,448	20,024	2,536	.....	.....
St. Etienne	329,054	738,097	443,446	682,946	305,738
Bâale	1,816,061	2,811,761	1,912,165	2,304,182	2,063,899

The export of velvet ribbons has greatly increased at the two leading places for the manufacture thereof, viz, St. Etienne and Crefeld, and has reached a point which had theretofore never been approximated. The figures for Lyons and Cologne are not complete.

VELVET RIBBONS.

	1879.	1880.	1881.	1882.	1883.
Crefeld	$11,293	$875	$814	$27,553	$243,937
Lyons	.....	673	.....	.....	.....
St. Etienne	145,995	73,122	17,915	120,663	767,673
Cologne	.....	.....	870,389	557,655	.....

FERDINAND VOGELER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort-on-the-Main, April 18, 1884.

HOW BUTTER IS MADE IN DENMARK.

REPORT BY CONSUL RYDER, OF COPENHAGEN.

I have herewith the honor to present a report on the mode of procedure which appears to be most generally recommended for adoption to the large butter-making classes in this country.

Whilst it is fully admitted here that the dairy thrift, thanks to the valuable assistance so devotedly afforded by many of their able scientific bodies, has in the later years made immense progress, it is acknowledged at the same time that the goal has not yet been reached, to which their attention should be constantly drawn, namely, that all the butter produced should be brought under the classification of first and second quality butter. There is thus every call for continuing work in this direction, and all who do this will not only be deriving advantage and satisfaction for themselves, but will likewise be contributing to the national prestige and pre-eminence in this important branch of the landed interests.

HOW DANISH COWS ARE FED.

With the hope of offering some aid toward promoting the object in view, the following modes of procedure carried on at some of the principal dairies have been given.

A course of foddering, which has been pursued for many years and found to answer, has been as follows: 4 pounds coarse wheat bran; 4 pounds of mixed groats (barley and oats); 1¾ pound of rapeseed cake; 1 bushel of mangold-wurzel; with a good allowance of clover hay per cow daily. It may also be taken for granted that the more uniform the fodder the more advantageous it will be, as the milk will then be also of more uniform character. The goal which has to be kept in view, namely, the producing of first and second class butter, is not one of such great difficulty. The same amount of labor is required whether one pound of good or one pound of bad butter is made, and a more favorable return is naturally obtained from the produce of the better article, not alone from the higher money value, but, as a general rule, because

it will be found that a larger quantity of butter will be obtained from a similar amount of milk when the butter is of good quality than in the cases where it is bad.

HOW DANISH BUTTER IS MADE.

For butter-making the following mode of procedure has been advantageously pursued in several of the dairies.

Great attention is paid that the milking is carried on with all possible cleanliness; for whenever any dirt is allowed to be left in the milk no good products will be obtained therefrom, as the dirt cannot be removed by straining. The moment the milk pail is filled it is immediately taken from the cow-stable to the dairy, lest it might otherwise receive injury from the atmosphere of the stable.

As soon as the milk is brought into the dairy it is strained into tinned vessels, each containing 35 pounds, and then put into iced water for cream-setting. Pails of this size are easy to handle, and have also the advantage that the milk is sooner cooled in them than with pails of greater dimensions. For the purpose of cream-setting the morning's milk is allowed to lay over for twenty-four hours. When the milk is skimmed, the cream is then sieved into a tinned, iron-plated pail, which is much to be preferred to the old-fashioned wooden ones, inasmuch as the cream can be heated or cooled by sinking the pail into warm or cold water, as may be desirable. The sieve, which is used both for the cream or milk, has a tin border, and is covered over with a piece of butter-gauze, No. 10; such description of sieve is much cheaper than one of horse-hair, and is better able to keep back all hair substances. When the cream in the morning is put into the cream-tub it is warmed by sinking the tub into water heated to a temperature of 20°; 6 per cent. buttermilk is afterwards added, whereby the temperature is reduced to 19°.

Towards mid-day the temperature of the cream will be about 14°, and the cream is then put into a lined tub, so that it shall not be too much cooled. The cream is stirred every second hour; and when it is inspected at six o'clock the curding should have commenced, and the temperature should then be kept at about 12½°.

If the temperature is greater, the butter will lose in quality, and cheesy matter will form in the cream. If the temperature is below 12°, the cream will not be of sufficiently even nature, as half-soured cream will yield little, bad, and nonpreserving quality of butter. At 8 o'clock the cream will be of uniform character, and it should then be well stirred, and when, after a few hours, it has attained a temperature of 11°, it must be again well stirred, so that it may be certain the souring is universal throughout.

When the cream is allowed to lay quietly over night it will be found on the following morning to have a temperature of 9° to 10°.

If in the summer season it is too warm, it is cooled in iced water of a temperature of 8°, as a too rapid cooling has always an injurious effect upon the cream.

If in winter it is too cold, it is then warmed up to churning temperature of 11½° by sinking the cream pail into warm water. When churning temperature is reached, ½ quint of coloring is added to every 100 pounds of cream and it is then poured into the churn.

It is of great importance that the churn should be of dimensions proportionate to the quantity of cream which has to be churned. With a

churn whisk making 200 revolutions in the minute, and when all else is in order, butter will be made in 30 minutes churning.

When the butter begins to make its appearance, it is washed off with water of a temperature of 8°.

It will be best to make use of a small can for the washing, rather than one of a larger measure, as it will be easier with this can to get the water into all the crevices and still avoid the pouring of too much water in the butter.

After this it is churned for a short time quite slowly, until the butter grains are as large as a big pin head. Then the churn is stopped and is lifted on a pedestal and the buttermilk is allowed to run off through two holes in the bottom of the churn. That the churn should be arranged in such manner as that the buttermilk can be tapped off is a precaution upon which great stress is laid, because one thereby avoids washing the butter grains, a thing one cannot avoid doing when the butter is taken out of the churn with a sieve.

When the buttermilk is run off, half a pail of water of a temperature of from 9° to 10° is poured over a churning of 10 pounds of butter. It is poured over the butter at repeated intervals whilst the churn is shaken backward and forward. The water is then run off and the butter again washed over with the same quantity of water as before. The butter is then taken out of the churn and laid upon the butter trough, where it is weighed, and kneaded three to four times with a spoon. Thereafter 3 per cent. of salt is mixed with it, when it is again kneaded, three to four times, so that the salt may be well mixed in. After the lapse of 20 minutes, it is again kneaded and is then allowed to stand about one hour before it is taken upon the kneading board in pieces of from 4 to 5 pounds, when it receives its final kneading.

After the last kneading the butter is immediately laid down into the cask, where it must be packed as closely as possible, so that no air can come to it, otherwise it will lose much in its keeping properties.

It must always be borne in mind that careful attention to the curding of the cream is a matter of paramount importance towards the production of good butter, and the foregoing mode of procedure is strongly recommended as the ideal which should be strenuously kept in view. Nor should it be forgotten that those only who churned daily need expect to obtain good butter. Those even who possess only one cow can accomplish this if the size of the churn is in proportion to the amount of the milk employed.

HENRY. B. RYDER,
Consul.

CONSULATE OF THE UNITED STATES,
Copenhagen, March 4, 1884.

SKIMMED-MILK CHEESE MAKING IN DENMARK.

REPORT BY CONSUL RYDER, OF COPENHAGEN.

To all dairy proprietors it is a well-known fact that, while butter is an article at all times eagerly sought after and easily disposed of, skimmed-milk cheese, on the other hand, is hard to dispose of. Many methods have been tried, in its manufacture, in the attempts to bring this description of cheese more into repute, but, unfortunately, so far without much

success. The following mode of procedure would, however, appear to have met with much approval in many quarters:

As soon as the milk is separated from the cream by the centrifuge it is taken, fresh and sweet, for cheesing, which in a great degree contributes towards the attainment of favorable results. There has then to be added a sufficient quantity of rennet, so that the milk can be curdled in the course of thirty minutes at a temperature of 28° to 30° C. (22° to 24° R.). It is also of importance that the temperature should be carefully watched, and that just the right quantity of rennet is added, so that the cheesing shall be completed in the thirty minutes, for if the commencement is faulty so surely will the result be of an unfavorable nature.

So soon as the milk is well curdled it is then cut up with the cheese-knife, in a circular form, and with the aid of two cheese forks the pulp is broken up until it is subdivided into small irregular pieces, which will be effected in from four to five minutes. The pulp is then left quiescent for about fifteen minutes, during which period as much whey as possible is run off. The cheese mass is then rapidly stirred about for another five minutes at a temperature of 28° C. (22° R.). During the heating in the caldron this should be kept over the fire, but in such manner that the temperature is never allowed to rise or fall more than 2° C. at the utmost, namely, from 30° to 28° C. (21° to 22½° R.). With this mode of treatment the cheese pulp has the appearance of clean snow down, and it may be removed after lying over for another five minutes.

When more rennet is added, or the pulp allowed to lie over for a longer period, the cheese will become harder and more coarse. The cheese pulp is then placed on the table in large molds and is carefully distributed into these. These molds are subsequently replaced by others of proper size, which have a breadth of 60 and depth of 10 centimeters. The cheese is then pressed slowly and, at the commencement, very lightly, with a screw, but later on greater pressure may be made by placing heavier weights upon it.

During the course of this work, the dairy-maid should on no account absent herself from the cheese press, for the cheese being in a soft state its position may require to be frequently changed.

After the lapse of 10 to 15 minutes the cheese is then taken up and turned, and the cloth drawn more tightly together, and it is then put into the press to be treated in the ordinary manner. The cheeses must be turned frequently and the whey entirely squeezed out, which is a point of much importance.

Thus, for example, if the cheese is first taken out of the press at noonday, by 5 o'clock in the afternoon it should have been turned 5 times, and each time encircled with a fresh cloth, namely, at 12 o'clock, 1, 2, 3.30 and at 5. In the evening at 9 o'clock, and again next morning at 6 the cheese must be wrapped in fresh cloths, and at 9–10 o'clock it may be placed in the press without a cloth; but in a short time with a mold covering, so that its exterior may be perfectly smooth and even.

The cheeses are afterwards laid down without any covering into the salt pickle, where they should be left for at least three, and at most six days. The brine should be very strong and should be kept of uniform strength, so that the pickle need not be drawn off, but may be carried over to another salting tub and there again brought up to the required strength. If the brine is not of sufficient strength, the cheese becomes sticky, and does not acquire a good rind, and the effect of the brine on the cheese pulp is not sufficiently strong.

The pickle should have the effect of binding the pulp together, so

that the poorer substances which it contains become harmless, and a firm rind for the protection of the cheese is formed.

All cheeses become slightly swelled in the stage of pickling, but when after the lapse of a few days they have become soft and mellow, they will receive a good shape, and will have neither cracks nor blisters when salted daily for about fourteen days in a damp place, where the temperature can be raised to 15° C. (12° R.).

The cheese should thereafter be laid upon dry shelves in a humid chamber with a temperature of 17° to 18° C. (13½° to 14½° R.), and there daily dried, turned, and salted. For the ensuing four weeks they should be dried, turned, and salted every second or third day, and in the last four weeks* this should be done once a week, when the classes will be ripe and in fit condition for keeping, so that they may be sent to the warmest climates.

If the cheese has not been disposed of by the time they are three months old, they should be kept on dry shelves, and in a room that is not too humid. Here they should be dried and turned every eighth day; but should never be allowed to lie edgeways, as this tends to damage the interior of the cheese.

Great care should be taken that the cheese is turned daily during the time it remains in the brine, otherwise it is liable to bulge out on the one side more than on the other. They must never be allowed to lie one on top of the other in the pickle, but should be entirely covered by it.

Cloths should not be used on the cheese; they only do damage. The size of the pickling tubs must be regulated by the number of cheeses which are made daily. A tub with lid, calculated for eight cheeses, will cost about $9, and such sized tub will be required when the daily make is two cheeses. On an average, from 100 pounds of milk, 3½ pounds of fine butter and 7 pounds of cheese will be obtained.

The following striking experiments which have been made are at the same time worthy of mention. When the cheeses were taken out of the pickle after the lapse of two to three weeks, they were put for about fourteen days into a room without being salted. The room was kept heated by steam to 22° C. (18° R.), so that the cheeses were made to sweat freely, thereby causing a deposit of a large quantity of impure mater, which was wiped off at intervals. The cheeses treated in this way, as compared with those made in the ordinary manner, showed so great a difference in respect to the state of the inner pulp as would scarcely be imagined. The cheese pulp was soft and pliant, and seemed to be richer than the other cheeses.

As soon as this experience had been obtained, a room for the reception of three hundred cheeses has been arranged with powerful steam, and another of similar dimensions with less powerful steam, so that the same cheeses can gradually receive a lower temperature and less moisture.

It is maintained that, in spite of all methods that may be used, nothing but poor-class cheese will ever be obtained from skimmed milk. This, however, need not be so. It is quite certain that if, by some proper mode of treatment, such change can be successfully introduced that from the hydrogenous substances in the cheese fat can be formed, then it will be possible from the poor cheese, which is rich in these substances, to obtain a better quality, and this is undoubtedly within the range of possibility. It is unquestionable that strong brine operates against such

* As in the consul's report.

fat formation, and it is maintained after these experiments that if the strong brine could be avoided and the cheeses be exposed to a treatment of heat and moisture, there may be good grounds for thinking that this change may be brought about.

HENRY B. RYDER,
Consul.

CONSULATE OF THE UNITED STATES,
Copenhagen, January 7, 1884.

CHANGES IN THE FRENCH TARIFF.

REPORT BY CONSUL-GENERAL WALKER, OF PARIS.

I have the honor to inform you that by a law which has just passed the French legislative bodies some changes have been made in the French customs tariff.

It has been enacted that from and after the 5th day of April, 1884, in lieu of the duties heretofore imposed on the importation of goods, wares, and merchandise hereinafter specified, the following rates of duties shall be paid:

Wax, crude		Free.
Anise seed		Free.
Rosin, other than from pine trees		Free.
Medicinal barks, flowers, leaves, plants, roots, fruits, and seeds		Free.
Plaits or mattings of three stands for cordage	per 100 kilograms..	$0.10
Straw, bark, or matweed plaitings and plaits of white wood:		
Straw, rough, for matting floor	per 100 kilograms..	19.3
Straw, other, of all kinds	do	96.5
Straw hats, all kinds	do	1 93
Hats of bark, matweed, palms fibers:		
Untrimmed	do	1 93
Trimmed	do	57 90
Sea salt, brine salt, rock salt, imported by sea, the channel, or ocean:		
Crude or white salt not refined	per 100 kilograms..	40.5
White, refined	do	63.7

GEORGE WALKER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Paris, France, April 8, 1884.

PETROLEUM MONOPOLY IN GREECE.

REPORT BY MINISTER SCHUYLER.

Referring to my dispatch, No. 50, dated December 6, 1883, with reference to the proposed monopoly of petroleum, I have the honor to inclose a translation of the bill establishing this monopoly, which was introduced in the Chamber of Deputies last week.

Owing to a press of business this may not be brought up for discussion for some time yet.

EUGENE SCHUYLER,
Minister Resident.

UNITED STATES LEGATION,
Athens, February 18, 1884.

[Translation.]

No. 61.

BILL for the exclusive right to the importation and sale of petroleum.

ARTICLE 1. The importation and sale of petroleum throughout the whole kingdom belongs exclusively to the state.

ART. 2. Permission is given to the minister of finances to agree, by public bids or private contract, for the provision of petroleum up to about 12,000,000 okes (33,720,000 pounds) yearly, embracing the existing deposits and the amount to be imported by virtue of previous contracts.

ART. 3. The price of the petroleum sold by the state will be fixed by royal decree; it cannot surpass the market price of the country of its production, with the addition of the expenses of cases and transport, the duties and taxes imposed at the time of the passage of the present law, and an additional 10 per cent. for the collection of the above, for the loss in quantity, and the expenses of administration.

The limit of the price as above fixed is on each occasion fixed and certified by the court of accounts.

ART. 4. In the interval of one month after the present law comes into force, those persons possessing petroleum in quantities greater than ten okes must surrender it to the competent tax-collector, or to the custom-house authorities, on receiving its value, at a price fixed by the competent administrative authority, together with the collector of taxes and the justice of the peace of the capital of the province, according to its weight and purity.

Whoever does not wish, on the above conditions, to surrender the petroleum he possesses may, during the above term, export it under the supervision of the competent custom-house authorities and according to the formalities of the revenue laws. From the day of the publication of the present law the state has the right of supervision over the store-houses where the petroleum destined for commerce is kept.

ART. 5. From the day on which the present law goes into effect the importation and sale of petroleum is forbidden in Greece otherwise than according to the present provisions.

ART. 6. Those who violate the dispositions of the preceding article are liable to a fine of from 100 to 1,000 drachmas. The petroleum and the means by which it is transported will be seized and sold by public sale. The captains of ships and drivers of carts or animals which make the transport are liable to the same fine.

The above penalties, collected according to the law for the collection of public revenues, will be shared equally between the state and the informer, whether the latter be a private man or a Government official or servant.

ART. 7. For violation of the provisions of the present law, besides the penalties imposed by the preceding article, the dispositions of Art. 1 of the law of June 13, 1877, No. 616, are applicable, the duties imposed upon the custom-house officials by that article being transferred to the competent tax-collectors.

ART. 8. Those who counterfeit or imitate the seals established by royal decrees or other distinctive marks on the petroleum sold by the state will be punished by imprisonment for from eight days to two years, as principals; those who knowingly sell petroleum bearing counterfeits of the above marks, as accomplices.

ART. 9. There will be fixed by royal decree: The day on which this law goes into force, except the right of supervision according to Art. 4, which shall be in force from the insertion of the law in the *Government Journal;* whatever relates to the management and the sale of petroleum, as also the compensation for this, which cannot exceed 5 per cent.; all that relates to the preparation of petroleum for sale, and to the execution of the present law.

The Minister of Finances,

CH. TRICOUPIS.

ATHENS, *February* 1, 1884.

PETROLEUM IMPORTS INTO AUSTRIA-HUNGARY.

REPORT BY CONSUL-GENERAL WEAVER, OF VIENNA, ON THE RECENT DECREE REDUCING THE TARE FORMERLY ALLOWED ON THE IMPORTATION OF PETROLEUM INTO AUSTRIA-HUNGARY.

I have the honor to report that, by virtue of a decree recently issued by the ministers of finance and commerce of this empire, the rate of tare on imported crude or refined petroleum formerly allowed, viz, 20 per cent. of the gross weight, has been reduced to 15 per cent. for bar-

rels weighing over 300 kilograms (661.38 pounds avoirdupois) gross weight and 18 per cent. for barrels weighing 300 kilograms or less, gross weight. This decree, of which the following is a full translation, went into operation on the 15th instant:

DECREE.

In consequence of the changed conditions of relative weights of certain packages containing mineral oil, paragraph I of the ministerial decree of August 16, 1882 (Imperial Law Gazette, No. 115), which establishes certain rates of tare in percentages of the gross weight for the purpose of ascertaining the net weight in the payment of entry duties on mineral oil, also brown coal and slate tars (Tariff Nos. 119, 120, and 121), is hereby modified by virtue of Article 17 of the general tariff law of May 25, 1882 (Imperial Law Gazette, No. 47), so far that the rate of tare shall be as follows:

(*a.*) Thirteen per cent. for barrels containing crude Roumanian mineral oil. (Note 2 to Tariff, Class XXI.)

(*b.*) Fifteen per cent. for barrels of mineral oil of the tariff numbers 120 and 121*b* having a gross weight of over 300 kilograms per barrel.

(*c.*) Eighteen per cent. for barrels of mineral oil of the tariff numbers 120 and 121*b* having a gross weight of over 300 kilograms and less per barrel.

(*d.*) Twenty per cent. for barrels containing mineral oil different from those above mentioned.

(*e.*) Twenty-four per cent. for boxes containing tin cans, bottles, or jugs.

(*f.*) Sixteen per cent. for baskets containing tin cans, bottles, or jugs.

(*g.*) Ten per cent. for tin cans, bottles, and jugs.

This decree will go into force on the 15th day of April, 1884.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, April 22, 1884.

AMENDMENTS TO THE CANADIAN CUSTOMS.

REPORT BY COMMERCIAL AGENT ROBBINS, OF OTTAWA.

I have the honor to transmit herewith amendments made to the customs acts of Canada, during the session of Parliament just closed, as published in the Canada Gazette, the official organ of the Dominion.

R. B. ROBBINS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Ottawa, April 28, 1884.

[Inclosure 1 with dispatch No. 67 from Ottawa.]

CHAP. 29.—An act to amend "the customs act, 1883." (Assented to 19th April, 1884.)

Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

1. Section one hundred and eighty-eight of "the customs act, 1883," is repealed and the following section enacted in lieu thereof:

"188. All penalties and forfeitures incurred under this act or any other law relating to the customs or to trade or navigation, may, in addition to any other remedy provided by this act or by law, be prosecuted, sued for and recovered with full costs of suit, in the exchequer court of Canada or in any superior court or court of vice-admiralty, having jurisdiction in that Province in Canada where the cause of prosecution arises, or wherein the defendant is served with process; and if the amount of any such penalty or forfeiture does not exceed two hundred dollars, the same may, in

the Provinces of Ontario, Quebec, New Brunswick, Nova Scotia, British Columbia, Manitoba, and Prince Edward Island, respectively, also be prosecuted, sued for and recovered in any court having jurisdiction in the place where the cause of prosecution arises, or where the defendant is served with process."

2. Section one hundred and fifty-three of the said act is repealed and the following section enacted in lieu thereof:

"153. If any person, with intent to defraud the revenue of Canada, smuggles or clandestinely introduces into Canada any goods subject to duty, or makes out or passes or attempts to pass through the custom-house any false, forged or fraudulent invoice, or in any way attempts to defraud the revenue by evading the payment of the duty, or of any part of the duty on any goods, such goods shall be seized and forfeited; and every such person, his aiders and abettors shall, in addition to any other penalty or forfeiture to which he and they may be subject for such offense, be liable on conviction to a penalty of not less than fifty dollars and not more than two hundred dollars or to imprisonment for a term not less than one month nor more than one year, or to both fine and imprisonment within the said limits; and such conviction may be had in a summary manner, before any two justices of the peace or before any judge or magistrate having the powers of two justices of the peace."

3. Section eighty-six of the said act is hereby repealed.

4. This act shall be construed as part of the act amended by it, but its provisions, so far as they differ from those for which they are substituted, shall apply not only to cases in which the offense has been committed, but also to those in which the prosecution for the penalty or forfeiture thereby incurred is commenced after the passing of this act, although the offense was committed before the passing thereof.

[Inclosure 2 with dispatch No. 67 from Ottawa.]

CHAP. 30.—An act to amend the present tariff of duties of customs. (Assented to 19th April, 1884.)

In amendment of the tariff of duties of customs, under the act passed in the now last session of Parliament of Canada and intituled "An act further to amend the tariff of duties of customs" and of the acts amended thereby: Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

1. The duties of customs (if any) imposed by the acts referred to in the preamble to this act, or by any other act, on the following articles respectively, and now in force, are hereby repealed, and the said articles are hereby added to the list of free goods, Schedule B, of the act passed in the forty-second year of Her Majesty's reign, chaptered fifteen, and intituled "An act to alter the duties of customs and excise":

Bolting cloths, not made up.
Boracic acid.
Canvas, jute canvas, not less than fifty-eight inches wide, when imported by manufacturers of floor oil cloth for use in their factories.
Cherry-heat welding compound.
Grease and grease scrap.
Indigo, paste, and extract of.
Iron or steel beams, sheets, plates, angles and knees, for iron or composite ships or vessels.
Manganese, oxide of.
Potash, German mineral.
Sodium, sulphide of.
Steel for saws and straw cutters, cut to shape, but not further manufactured.

2. And the following articles are hereby struck out of the said free list:

Colcothar, dry oxide of iron.
Fish-plates, steel.

And all items or words in the said list contrary to, or inconsistent with, the foregoing provisions are hereby repealed.

2. The rates of duty chargeable under any act now in force or any of the articles hereinafter mentioned are hereby repealed and shall be held to have been repealed on and after the twelfth day of March, one thousand eight hundred and eighty-four, except in so far as they are the same as those hereinafter mentioned, and the rates of duty hereinafter mentioned are substituted for them and shall be payable, and shall be held to have been payable on the said articles, respectively, on and after the day last aforesaid:

1. Acid acetic, twenty-five cents per imperial gallon.
2. Caplins, unfinished Leghorn hats, twenty per cent. ad valorem.
3. Celluloid, molded into sizes for handles of knives and forks, not bored nor otherwise manufactured, ten per cent. ad valorem.

4. Carpeting, matting, and mats of hemp, twenty-five per cent. ad valorem.
5. Jeans and coutilles, when imported by corset-makers for use in their factories, twenty per cent. ad valorem.
6. Printed or dyed cottons, not elsewhere specified, twenty-seven and a half per cent. ad valorem.
7. Cotton, forty-two inches wide and over, when imported by manufacturers of enamelled cloth, for use in their factories, fifteen per cent. ad valorem.
8. Cotton warp, No. 60 and finer, fifteen per cent. ad valorem.
9. Earthenware decorated, printed, or sponged, and all earthenware not elsewhere specified, thirty per cent. ad valorem.
10. India-rubber valcanized handles for knives and forks, ten per cent. ad valorem.
11. Iron, cast-iron forks not handled nor ground or otherwise further manufactured, ten per cent. ad valorem.
12. Labels for fruit, vegetables, meat, fish, and confectionery, also tickets and advertising bills and folders, a specific duty of ten cents per pound, and twenty per cent. ad valorem.
13. Pins, manufactured from wire of any metal, thirty per cent. ad valorem.
14. Soap-powders, a specific duty of three cents per pound.
15. Steel, ingots, bars, sheets, under three-sixteenths of an inch thick, whole or cut to shape, but not further manufactured, and rolled round wire rods in coils, not elsewhere specified, three dollars per ton of 2,000 pounds, and ten per cent. ad valorem.
16. Steel, rolled round wire rods under half an inch in diameter, when imported by wire manufacturers for use in their factories, five per cent. ad valorem.
17. Steel needles, viz, cylinder needles, hand-frame needles, and latch needles thirty per cent. ad valorem.

SUGARS, SIRUPS, AND MOLASSES.

18. Sugar, when imported direct without transshipment from the country of growth and production, above number fourteen Dutch standard, a specific duty of one cent per pound and thirty-two and a half per cent. ad valorem; equal to number nine and not above number fourteen Dutch standard, a specific duty of three-fourths of a cent per pound, and twenty-seven and a half per cent. ad valorem; below number nine Dutch standard a specific duty of one-half cent per pound, and twenty-seven and one-half per cent. ad valorem.
19. Melado and concentrated melado, three-eighths of one cent per pound, and twenty-seven and one-half per cent. ad valorem.
20. On all the above sugars, melado, and concentrated melado, when not imported direct without transshipment from the country of growth and production: Above number fourteen Dutch standard a specific duty of one cent per pound, and thirty-five per cent. ad valorem; equal to number nine and not above number fourteen Dutch standard, a specific duty of three-fourths of one cent per pound, and thirty per cent. ad valorem; below number nine Dutch standard, a specific duty of one-half cent per pound, and thirty per cent. ad valorem.
21. Melado and concentrated melado, a specific duty of three-eighths of one cent per pound, and thirty per cent. ad valorem.
22. Concentrated cane juice, concentrated molasses, concentrated beet-root juice, and concrete, whether imported direct or not, a specific duty of three-eighths of a cent per pound, and thirty per cent. ad valorem.
23. Sirups, cane juice, refined sirup, sugar-house sirup or sugar-house molasses, sirup of sugar, sirup of molasses, or sorghum, whether imported direct or not, a specific duty of five-eighths of a cent per pound, and thirty per cent. ad valorem.
24. Molasses, other, when imported direct, without transshipment, from the country of growth and production, fifteen per cent. ad valorem, on the value thereof, free on board.
25. Molasses, when not so imported, twenty per cent. ad valorem.

The value upon which the ad valorem duty shall be levied and collected upon all the above-named sugars, melado, sirups, molasses, &c., shall be the value thereof, free on board, as provided by section 77 of "the customs act, 1883."

26. Zinc, chloride, salts and sulphate of, five per cent. ad valorem.

3. All such parts of the said act forty-second Victoria, chapter fifteen, and of the acts amending the same, or of the schedules to such acts, as impose a duty of twenty per cent. ad valorem on "mill-irons and mill-cranks and wrought forgings for mills and locomotives or parts thereof, weighing 25 pounds or more," and on "stationary of all kinds, not elsewhere specified," or which impose any other duty of customs on dyed cotton, jeans, coutilles, cambrics, silicias, and casbans, or on any of the said articles, than those imposed thereon by this act, or which admit any such articles free of duty when imported into Canada, are hereby repealed.

4. The eighth section of the said act forty-second Victoria, chapter fifteen, is hereby repealed, and the following substituted therefor:

"8. An allowance may be made for deterioration by natural decay during the voyage of importation, upon perishable articles such as green fruits and vegetables, imported into Canada; but in assessing the same, and in estimating the damage by breakage upon brittle goods, such as crockery, china, glass and glassware, under the provisions of sections 53 and 54 of 'the customs act, 1883,' such allowance or damage shall only be made and allowed for the amount of loss in excess of 25 per cent. of the whole quantity damaged, and only in case claim is made therefor and the loss or damage certified upon examination made by the appraiser or proper officer of customs, within three days of the landing or arrival of such goods at the port of destination thereof; and provided the duty has been paid on the full value thereof, a refund of such duty may be allowed and paid on application to the minister of customs, in the proportion and on fulfillment of the conditions above specified, but not otherwise."

5. The foregoing provisions of this act shall be held to have come into force on the twelfth day of March, in the present year of our Lord one thousand eight hundred and eighty-four, and to apply and to have applied to all goods imported or taken out of warehouse for consumption, on or after the said day.

BEER AND BEER BREWERIES IN BAVARIA.

REPORT BY CONSUL HORSTMANN, OF NUREMBERG.

THE ORIGIN OF BEER.

I have the honor to submit herewith a general report on Bavarian breweries and their product.

The origin of beer, like that of many of the best institutions of this world, is lost in the gray mists of antiquity. It is supposed to have been known to the early Egyptians, but no mention is made of it in the Bible, whereas in the first chapters of the First Book of Moses we are already made acquainted with the making and with the effects of wine. It is very natural that wine should have been the beverage to be first invented, for it is made of a single ingredient, which, in its natural state, is pleasant to the taste. It must have been a fine mind, however, to conceive that in a combination of hops and malt, neither of which is palatable in its separate state, one of the most delicious beverages should come to light. Perhaps like many other great inventions it was the result of chance. Old German traditions attribute it to King Gambrinus, a legendary hero whose fame was further exalted by his personally testing to his full capacity the merits of his invention. But prosaic minds contend that "Gambrinus" is a mere corruption of "Jan Primus" (John the First), of Flanders, who lived in the thirteenth century.

Tacitus mentions in his works on Germany that its inhabitants used a liquor made of barley and other grain that was "nearly as good as wine." In the chronicles of the twelfth century we find dissertations on the manner of brewing. Already in the eighth century the term "beer-barrel" occurs.

In 1575 a doctor of laws, Heinrich Knaust, wrote a work entitled "Five books on the godlike and noble gifts of the philosophical, highly prized, and wonderful art of brewing beer; an exquisite and philosophical secret; a particular gift of God to mankind, that it may discover, know, and comprehend how to force a delicious, sweet (white or red), hoppy, palatable drink from the preparation and cooking of wheat or barley, that those people may have entertainment in whose land no wine grows, and who would otherwise be doomed to drink nothing but water."

It will be seen from the above with what affectionate care the subject was treated three hundred years ago. Even for centuries before that time beer seems to have been considered a "God-like gift," for it is a notable fact that the earliest breweries were founded by monks of various orders, and those pious men knew as well what was good for the palate as for the soul; and to the present day some of the very best beer that is brewed is produced in the cool vaults of the monasteries.

Breweries were in existence in Bavaria previous to the founding of the city of Munich by Henry the Lion in 1158, but up to the fifteenth century the principal drinks of the inhabitants were mead (a fermented mixture of water, honey, and various fragrant herbs), the Tyrolean, the sweet, and Bavarian wines.

One of the first breweries in Bavaria was the one established in the year 1146 at Weihenstephan (the present brewers' academy), by the bishop of Freising.

One of the oldest breweries in Munich was the one belonging to the "Holy Ghost Hospital," founded in 1286. In the year 1325, under the reign of the Emperor Louis, the Bavarian, there was already a court brewery established, which was the property of the Crown.

In 1370 there were but three breweries in Munich, which number, in the course of two centuries, had increased to fifty-three.

In the sixteenth century wheat beer was introduced into Munich from Bohemia, and threatened, in the beginning, to supersede the brown beer, but the opinion soon began to be held that white beer was not wholesome, and, moreover, it was contended that the consumption of wheat for that purpose would soon drain the country of that cereal and there would be none left for other purposes. Different measures were taken to restrict the brewing of white beer, all of which proved failures; at last the Duke of Bavaria took to himself the sole right of brewing it, and thus was established the royal white beer brewery, which exists to the present day.

There were (in 1882) 5,482 breweries in Bavaria, or a little more than one to each thousand inhabitants. In Munich the smaller breweries have been gradually swallowed by the larger establishments, and there are now 29 breweries in the city, the largest of them using 130,000 hectoliters (364,000 bushels) of malt, and producing about 7,000,000 gallons of beer per annum.

In all Europe there are 40,000 breweries, producing about 102,000,000 hectoliters (74,800,000 barrels) of beer; of this quantity Bavaria produces 12,230,000 hectoliters (8,970,000 barrels). Munich consumed nearly 1,000,000 hectoliters (733,000 barrels), of a value of about $6,000,000 annually.

LAWS RELATING TO THE BREWING OF BEER.

The first law regulating the making of beer was issued in 1420, allowing brewers to make mead, and a better and an inferior sort of beer, the restrictions being only as to the duration and the nature of fermentation (warm fermentation). The materials and their quantity for a certain amount of beer were not prescribed, but each brewer was bound to make a certain quantity of beer in order to meet the demands of the country.

The process of cold fermentation was introduced in Munich in the fifteenth century. It is now practiced throughout Bavaria, in most of the countries of Europe (with the exception of England and some parts of North Germany and Russia), and in the United States.

There was a law passed in the year 1553 directing that hops, barley, and water should be the only substances from which beer was to be brewed, and that the liquid should be sufficiently cooled before being brought to fermentation.* Every brewer was obliged to brew two different kinds of beer—summer beer and winter beer—the price for which was fixed by the Government uniformly for the whole country, the winter beer at four hellers per mass (one-third cent per quart), the summer beer at five hellers per mass (five-twelfths of one cent per quart). In Bavaria the beer is only brewed in the cold season—from September to the middle of April. Part of this beer, after a short storage in casks, is consumed during the winter, whence the appellation winter beer; the other part (for which more malt and hops are used) remains in the cellars till the summer months, and is drunk from the time the brewing ceases in the spring till it commences again in autumn.

In 1616, owing to the continuous fluctuations in the price of barley and hops, a new law or "beer regulation" was passed authorizing each community to make fixed prices annually for the summer and the winter beer in accordance with the prices of barley and hops and the fuel; besides the three substances permitted to be used in the manufacture of beer a small quantity of salt, juniper berries, and carraway seed was allowed. The said law further prescribed that from 5 "schäffel" of malt (31.5 bushels) not more than 15 eimers (1,065 quarts) should be made.

The principal features of this law remained in force until the passing of the new beer regulations of 1811. From that time on until the new trade law of 1867 was passed, it was only allowed to make 7 eimers (497 quarts) of winter beer and 6 eimers (426 quarts) of summer beer from 1 schäffel (6.3 bushels) of malt.

There are, at present, no restrictions as to the quantity of beer that shall be made from a certain quantity of malt, although most brewers, for the sake of their own reputation, conform to the usual rule of 2.3 volumes of winter beer and 1.9 to 2.0 volumes of summer beer to one volume of malt.

NUMBER OF BREWERIES AND QUANTITIES OF MALT USED AND BEER PRODUCED.

As already stated, there are in Bavaria about 5,480 breweries, using in the aggregate 14,802,500 bushels of malt, which are converted into about 8,970,000 barrels of beer. Of these breweries, 5,053 are owned by private persons, 19 are joint-stock companies, 357 belong to communities, and 51 sell all their beer to the consumer on the premises; 411 breweries are worked by steam-power, 354 by animal-power, and the rest partly by water-power and by hand.

The largest breweries are in the capital; the principal one of these ("Brauerei zum Spaten") used, in 1881, 372,400 bushels of malt; next in rank are four establishments using from 140,000 to 252,000 bushels each. Of the remaining 5,475 breweries in Bavaria only 130 use more than 14,000 bushels annually, and of these last, eleven are in Munich. There are, further, 1,106 breweries consuming from 2,800 to 14,000 bushels of malt, and 4,239 breweries using less than 2,800 bushels each.

Most of the beer produced in Bavaria is consumed in the country itself, only about 7 per cent. of the whole production being exported. The principal cities taking part in this export—which is chiefly to North Germany, France, and the United States—are Munich, Kulmbach, Nuremberg, and Erlangen.

* This law is still in force.

The exports of beer from this consular district to the United States (representing almost the entire trade of Bavaria with our country in this article) were, for the last ten years, as follows:

1872–'73	$6,745
1873–'74	30,866
1874–'75	31,875
1875–'76	12,822
1876–'77	7,000
1877–'78	20,448
1878–'79	13,255
1879–'80	26,278
1881	39,692
1882	34,318
1883	39,834

In this connection it may be of some interest to know what quantities of beer are consumed by the inhabitants of various countries; the following table shows the average annual consumption per capita:

	Quarts.
Bavaria	260
Würtemberg	225
Belgium	165
England	125
Baden	70
North Germany	65
Denmark	63
Alsace-Lorraine	50
United States	45
Netherlands	40
Switzerland	31
Austria-Hungary	30
Norway	29
France	25
Sweden	22
Russia	4

It will thus be seen that Bavaria takes the lead of all nations in its consumption of beer. It is quite natural that the chief characteristics of a nation should culminate at its capital, and Munich out-beers all Bavaria, the annual consumption there reaching the enormous figure of 470 quarts to each person, or about 1¼ quarts daily, whereas in the United States only about one-tenth of a quart is the daily requirement per capita, thus showing that the Munich man drinks thirteen times as much beer as one of our citizens.

In order to understand this great consumption of beer in Bavaria, it must be explained that the people begin drinking it from the cradle up. It is looked upon not as a stimulant or a mere delicacy, but as a necessary article of nourishment for the body.

It is often styled the "liquid bread" of the laborer, who generally takes beer for breakfast. Beer is drunk all the year round and at every hour of the day and night.

It would involuntarily lead me into a humorous article, but little suited for the staid pages of a consular report were I to give illustrations of the capacity of the Bavarians for the stowing away of their national beverage. A few figures will here suffice. Although, as I have said, the very babes begin drinking beer almost as soon as they do milk, yet the quantities consumed by them are comparatively small; then, again, if we count half the whole population as females, who, of course, are moderate (according to their ideas) in the use of beer, I suppose it would leave a showing of about 2½ or 3 quarts to each male over the age of sixteen years. Now, three quarts in the course of

twenty-four hours is a small amount to a true Bavarian. If I gave the figures of the capacity of an ordinary drinker, and of an accomplished drinker on festive occasions, they would appear startling. I venture to say there are thousands of men who drink their 8 quarts regularly every day of their lives, and many who drink even more. One man told me he had been drinking 17 quarts daily for many years. Another man was known to drink 6 liters (6½ quarts) every evening, besides what he had taken through the day. I am almost afraid to write how many quarts a full-fledged student, when put upon his mettle, can pack away, but it is nevertheless an established fact that a student can drink and does drink at times 10 to 12 quarts at a sitting. In order to get some idea of this quantity, suppose it were put into our ordinary five-cent glasses, filled as they usually are (for it must be remembered our glasses are one-half foam), we would have a row of about 60 glasses waiting to be emptied.

Recently at an evening festival at one of the Munich breweries, which was attended by about 800 persons, twenty-nine hectoliters of beer passed their lips in five or six hours, this averages about 3.6 quarts to each participant.

But the percentage of alcohol in Bavarian beer is less than in any other beer. In the making of beer two methods are in general use. The one is by a process of infusion, the other by a process of decoction. The object of the mashing is not only to extract the sugar and the dextrine which is contained in the malt, but also to produce sugar and dextrine from the existing starch with the help of the so-called diastase of the malt and a temperature of 60° Réaumur (167° Fahrenheit).

The process of infusion and the process of decoction differ from each other in the manner in which the temperature of the mash is raised to the proper degree for producing sugar. In the first-named process (which is practiced in England, France, and the most parts of North Germany), the mash is brought up to the proper temperature without any part of it reaching the boiling point. In the process of decoction which is the one universally practiced in Bavaria, the mash is brought up to the required temperature by putting a part of it in the kettle and heating it to the boiling-point, and then conducting it back to the rest of the mash in the mash-tub, so that the whole reaches a temperature of 42° Réaumur (126.5° Fahrenheit). A part of the whole is then put a second time in the kettle and brought to a boil and again returned to the rest of the mash, so that it reaches a temperature 60° Réaumur (167° Fahrenheit.) The proper temperature is generally reached by twice boiling a part of the mash, although in some few breweries it may be done in three successive boilings.

This process, of course, takes more time and demands more attention than the heating of the whole to a certain temperature (from 10 to 12 hours are required to finish the entire process), but better results are obtained by it. It is known as the Bavarian method, and produces a beer richer in dextrine, while by the method of infusion a beer is produced containing less dextrine but more alcohol.

The Bavarian winter beer contains about 4 per cent. and the summer beer 4.5 per cent. of alcohol, while porter contains from 6 to 7 per cent. and ale 6 to 9 per cent. of alcohol.

The malt used in Bavaria is partly from Bavaria itself and from Hungary. Bavaria produces an average crop of barley of 7,047,200 centner (16,150,000 bushels), principally raised in Lower Bavaria and Lower Franconia. The hops are mostly of Bavarian growth, these being universally acknowledged as the best.

SALARIES AND WAGES.

ırge establishments the master-brewers receive from $5,000 to $6,000
num; in middling-sized breweries from $2,500 to $3,000; and in
ɔreweries from $1,000 to $1,500. First-class helpers receive from
$40 per month; second-class helps from $20 to $30 per month, and
ɔlass helps from $18 to $20 per month.

helps are furnished free lodging on the premises, and receive
ɨ to 8 quarts of beer per day, but they are not entitled to an equiv-
ın money for the quantity of beer not consumed by them. Master-
rs are generally entitled to 15 to 20 quarts of beer per day, for which
ɨ are given them; but these checks are good for the day of their
ɔnly. In the larger establishments (especially in the cities) the
r-brewers have a considerable extra income from the sale of the
which they are allowed to dispose of for their own account. The
after being pressed into a thick mass, is packed in wooden or tin
isolated by sawdust or some other non-conductor of heat, and is
ɔd to all parts of the globe. Thus prepared, the yeast is sold for 50
ɔer pound, and the yield therefrom is equal, in many cases, to twice
ɔle the salary of the master-brewer.

beer being manufactured only in the cooler months of the year,
lps have to look out for other employment in summer; they are
ılly bricklayers during that season, and are well paid for their
ɐs. Even the largest establishments, which are provided with ice
ɔld-air machines, only now and then make beer during the hot
ı, for the purpose of preserving their yeast. In such cases only
of the better class are retained.

TAXATION OF BEER.

first attempt to impose a tax on beer in Bavaria was made in the
516 by Duke William IV, but his efforts remained fruitless. How-
n the year 1543 a law was issued placing a tax on imported and
ted beer, which was doubled in 1565. This law was revised in 1572,
l beer then paid a tax of 8.5 kreuzers to the eimer (about 11.3 cents
ırrel).

n followed a number of new laws, which all aimed at increased
on. In 1711 the beer tax was levied according to the quantity of
rewed, and no brewer was allowed to make more than a certain
ity of beer from his malt. At that time it was lawful to make 1,704
ɨ of winter and 1,662 quarts of summer beer from 31.5 bushels of
In 1726 the tax in Munich was 51 cents for 71 quarts of beer,
$1 per barrel, which, considering the low prices of the beverage,
heavy impost. It was also legal for the brewers' guild of a city,
each brewer individually, to pay an annual royalty instead of the
aid tax.

withstanding these unfavorable circumstances, the number of the
ries in Munich during the latter half of the past century was 52,
ıe quantity of malt converted into beer by them averaged from
to 31,500 bushels annually.

year 1806 brought more order into the Bavarian tax system, and
w law prescribed that $1.06 should be levied on 6.3 bushels of un-
ɔd malt. A year later this tax was raised to $1.50, and in 1811 it
ıill further raised to $2. It remained at this figure until the in-
ɔtion of the metric weights and measures in Germany in 1873, at
time the tax was fixed at $1 per hectoliter of malt (=$1 for 2.8

bushels). During the last two years the tax has been raised to $1.37 per 2.8 bushels, but at present it is $1.17 for the same quantity.

Rhenish Bavaria (the Palatinate) was free from malt taxation until the year 1878.

In the foregoing figures only the state taxes are comprehended, but it has been the custom in most cities and towns for over a century to impose a separate and personal tax upon all beer sold within their precincts; this municipal tax now amounts in Munich to about 45 cents per 2.8 bushels of malt, and brings an annual income of $250,000, being more than $1 to each inhabitant.

At present most of the Bavarian brewers have their own mills for crushing their malt, which, by a complicated device, measures and registers the quantity of malt running through them. No brewer is allowed to run his mill without having first declared the amount of malt intended to be crushed, nor without having paid or secured to be paid the taxes due the state and the municipality. The fines inflicted for non-observance of the rules prescribed by the tax law vary from 150 to 600 marks for the first offense; for succeeding offenses the total of such fines do not exceed 1,800 marks.

Brewers are, in general, satisfied with the mode in which they are controlled by law, as there is very little inconvenience to them in the carrying out of its provisions, and the brewing manipulations are in nowise impeded thereby. They justly complain, however, of the high rate of taxation, which is out of proportion to the prices obtainable for their product.

In the following I give the mode of taxation in some of the more important states of Europe:

In the North German states, where malt surrogates are allowed in the manufacture of beer, the tax is—

1. On malt, $1.50 per double centner (220 pounds).
2. On rice, $1.50 per double centner.
3. On starch, $1 per double centner.
4. On sugar of all kinds, $1.50 per double centner.
5. On sirups, $1.90 per double centner.

Wurtemberg brewers pay taxes according to the weight of the malt used; $1,75 is the impost on one centner (110 pounds).

In Baden the tax is computed on the size of the brewing-pan; for 10 hectoliters (264 gallons) of its capacity $3 are collected, whether the kettle is made full or not.

Alsace-Lorraine collects the tax on the same principle as Baden; of 10 hectoliters capacity of the pan, $5.30 are due, but 20 per cent. discount is allowed thereon for all future losses in quantity in the manufacture.

In Austria-Hungary the duties are paid according to the quantity of beer when on the cooler. For one hectoliter and 1 per cent. of malt extract (measured by the saccharometer of Balling) 16.7 Austrian kreuzers (about 8 cents) is the tax; this brings the impost on a hectoliter of ordinary beer (11 per cent. extract) to 88 cents. It is lawful in these countries to dilute the stronger beer after having been measured for taxation, but this dilution dare not be extended further than to bring the mixture to the strength of 11 per cent.

England collects the beer tax from the quantity of barley converted into malt. After the barley has been sufficiently soaked the water is drawn off and the barley remains without water for from 24 to 28 hours; the revenue officer then ascertains the quantity of the fruit, eight-tenths of which is the amount upon which the tax is computed.

In Belgium and Holland the beer tax is paid on the capacity of the mashing tubs, the same being 70 cents per hectoliter in the former and 25 cents per hectoliter in the latter country.

In France the tax is computed on the quantity of beer found in the kettle before bringing it to the cooler; of this quantity, 20 per cent. is deducted for future losses and about 55 cents are charged for one hectoliter of the remaining 80 per cent.

Russia collects 25 cents for each hectoliter capacity of the beer pan and mash tub together.

G. H. HORTSMANN,
Consul.

UNITED STATES CONSULATE,
Nuremburg, March 15, 1884.

INTERNAL-REVENUE STAMP LAW OF MEXICO.

REPORT BY MINISTER MORGAN.

On the 22d of March last the President published a decree, authorized by the law of the 26th of May, 1882, and the law of the 28th of April, 1883, amending the internal-revenue stamp law, and fixing the amount of stamps to be placed on the articles therein named. A copy and translation of the decree I inclose.

The delay for affixing these stamps expired on the 5th instant.

P. H. MORGAN,
Minister Resident.

UNITED STATES LEGATION,
Mexico, April 8, 1884.

[Translation—From the Diario Oficial.]

The President of the republic has seen fit to address to me the following decree:

MANUEL GONZALEZ, Constitutional President of the United Mexican States, to the inhabitants thereof:

Know ye,

That under the authority conceded to the Executive in letter B of the fraction XI of article 1 of the law of the 26th of May, 1882, and in virtue of the disposition contained in letters A and B of fraction IX of the only article of the law of the 28th of April, 1883, has seen fit to decree as follows:

ARTICLE 1. Fraction 59, article 4, of the stamp act of the law of the 15th of September, 1880, "Merchandise to be taxed," is amended as follows:

E.—WINES, BRANDIES, LIQUORS, AND BEER.

I. In every shop, special or mixed, grog-shops, restaurants, eating-houses, &c., where liquors are exposed for sale at wholesale or retail, or are deposited in warehouses, stamps shall be affixed upon the packages which contain them, of whatever character, in the manner which is hereafter expressed.

II. Red and white wines, such as Rhine wine, champagne, Tokay, Burgundy, and other fine foreign wine or wines bearing a foreign mark the price of which per bottle is above $1.50:

Bottle	$0 20
Half bottle	10
Quarter bottle	15

III. White or colored foreign wines, or bearing foreign labels, the price per bottle for which is less than $1.50:

Bottle	$0 10
Half bottle	06
Quarter bottle	02

IV. Brandies and foreign liquors or bearing foreign labels, the price of which per bottle, jug, flask, &c., is over $1.25:

Bottle	$0 20
Half bottle	10
Quarter bottle	05

V. The same brandies and liquors of which per bottle the price is less than $1.25:

Bottle	$0 10
Half bottle	05
Quarter bottle	05

VI. Foreign wines, liquors, and brandies, or foreign marks, in closed boxes, pipes, half barrels, demijohns, and jars shall be stamped on every piece with an ad valorem stamp at the rate of 15 per cent.

F.—NATIVE WINES AND LIQUORS.

Bottle	$0 03
Half bottle	05
Quarter bottle	01

G.—NATIVE BRANDIES, SUCH AS TEQUILA-MEZCAL, ETC.

Bottle	$0 05
Half bottle	03
Quarter bottle	01

I. Native wines, liquors, brandies, mezca, &c., in cases, pipes, barrels, half barrels, demijohns, and jugs, will be stamped with an ad valorem stamp at the rate of 10 per cent.

H.—FOREIGN BEER, OR BEER BEARING FOREIGN BRANDS.

Bottles	$0 05
Half bottles	05
Quarter bottles	01

When in barrels or other packages the stamp shall be at the rate of 100 per cent.

I. Native beer:

Bottle	$0 10
Half bottle	00½

II. In barrel or other packages, 5 per cent.

III. By bottles in this section is meant that which holds a liter, half bottle up to half a liter, and quarter bottle a quarter liter.

IV. The stamps mentioned in the preceding articles shall be placed upon the corks of the bottles or flasks, and upon the bungs of the pipes, barrels, or other packages, and upon the lock (cerraduras) of boxes.

V. The agents of the stamp law will see the ad valorem stamps upon wines, liquors, and brandies are properly placed in accordance with the marked value thereof, to be determined in case of disagreement between the officers and the owners thereof by two brokers, and if there be no brokers in the neighborhood by two merchants to be designated, one by the officer of the stamps and one by the party interested, and in case of a disagreement between these by a third person to be named by the parties.

I.—PLAYING CARDS OF EVERY DESCRIPTION.

I. Upon every pack of sixty cards, fine or common, native or foreign, a stamp shall be placed on the fold of the envelope of each pack to the market value thereof.

II. The manufacturers of native cards shall stamp their stock in trade, and when they unpack foreign cards which they intend to place upon the market, they shall place upon them the required stamp.

J.—PRESERVED MEATS AND FRUITS.

I. From the value of $0.12½ up to $0.25 on each fruit (pomo) vessel, box, or whatever other parcel, a stamp of ½ cent.

II. Above the value of 35 [25?] cents, ½ cent.

The articles included in this section are the following: Preserved meats in or cans; conserved meats in boxes or cans; prunes, figs, raisins, and every kind d fruit or fruit preserved in alcohol, sirup, or in their own juice, in bottles or ; foreign sweetmeats and confectionery of every class, in whatever packages ay be; foreign mustard in earthen vessels, bottles, or jars; pickles in earthen , bottles, or jars, however they may be packed; biscuit of every description, er they may be packed; fish and shell-fish in earthen vessels or jars; sauces of kind, and however they may be packed; tea in parcels, boxes, earthen jars, or er it may be packed.

The stamps mentioned in this section shall be placed on all the vessels, jars, , and other packages of earthenware or crystal—upon the corks thereof cover- e necks thereof; in cases and boxes on the locks, lids, and covers thereof, and kages on the covers where they open.

K.—HATS, CAPS, AND FUR CAPS OF ALL CLASSES AND FOR BOTH SEXES.

n each piece whose value is from $2 to $3, 1 cent.
And for each $1 or fraction more, 1 cent.
To the value of $2, free.
The stamps shall be placed on the inside lining.

L.—SHOES OF ALL CLASSES AND FOR BOTH SEXES.

n each, if the price per pair of shoes exceeds $2, 1 cent.
And for each $1 or fraction more, 1 cent.
Pair of shoes to the value of $2, free.
The stamps will be placed on the soles.

LL.—JEWELRY.

ll classes of jewelry and ornaments of gold, silver, or platina, &c., with or with- arls or precious stones, as watches, chains, rings, ear-rings, breast-pins, neck- buttons, &c., on each one, and according to their market value, 1 per cent.
The same ornaments, false or common, according to their market value, ½ per

Ornaments whose value does not reach 50 cents, exempt.

M.—HARDWARE, ETC., ARTICLES AND TOYS.

n each piece, and when unpacked for sale, upon the market value thereof, 1 nt.
On the same articles, common, ½ per cent.
Articles the value of which do not exceed 12½ cents, exempt.
By fine articles are understood articles of mere fancy and luxury, which are not tely necessary for domestic purposes; by common articles is meant those which ispensable for domestic uses, but not plated or gilded nor superfluously orna- l, not necessary to the uses to which the article is employed.
Scientific instruments and instruments employed in the arts and churches, and, lly, all classes of artisans' tools, exempt.

N.—FOREIGN EARTHENWARE, CRYSTAL, AND GLASS.

Upon each piece and when it is unpacked for sale, upon the market value there- er cent.
When the price does not exceed in value 12½ cents, exempt.
Articles manufactured in the country of crystal, earthenware, and porcelain ass, exempt.
On small articles as well for watchmakers as small articles of hardware, drugs, nware, and crystal, upon which it would be difficult to place the entire stamp ed for stamped merchandise, the top of the required stamp shall be placed n, or on the label thereof, by a thread which shall state the price thereof in or cipher, the merchant being held to destroy that portion of the stamp which t be placed on the label.
All the articles referred to in the foregoing article shall be stamped at the mo- they are unpacked for sale or for putting them in sale, and to fix their number e.
In establishing the percentage on the value of the stamps mentioned in the ing articles no account shall be taken of amounts of less than one-fourth of a

ADDITIONAL.

ART. 2. The principal officers of the internal revenue are only authorized to make a rebate of those who purchase stamps in large quantities for "listed merchandise," a percentage, as follows:

From $100 to $999, 1 per cent.

From $1,000 to $9,999, 2 per cent.

From $10,000 upwards, 5 per cent.

This operation shall be made upon the written request of the purchaser certified to by two witnesses.

ART. 3. It will be the duty of the ayuntamiento to execute the part of this law which is imposed upon them by the revenue law of the 26th of May, 1882.

ART. 4. In order to carry out the provisions of this law the revenue officers will keep a separate account of the sales of stamps for "listed articles" (mercancias cuotoyados), and the gross amounts thereof it will deliver to the municipal treasuries upon a full certificate of compliance, the president of the ayuntamiento being authorized to do what is necessary in the premises.

ART. 5. The ayuntamiento will see to it that no frauds are committed, and when they discover any violation of this law they shall immediately notify the same to the agents of the revenue, who will impose the fine fixed by the law of the 15th of September, 1880, which fine will be distributed equally between the ayuntamiento, the agent or administrator of the revenue, and the primary schools of the district where the infractions take place.

ART. 6. None of these dispositions shall be considered as prejudicing or in any manner destroy the power which the laws and regulations give to the federal agents to take care of the interests of the fisc.

This law shall take effect on the fifteenth day after its publication in each place, to the end that parties may have their goods stamped.

Therefore, it is ordered that the same may be printed, published, circulated, and that it may have its proper effect.

Done in the National Palace of Mexico on the twenty-second day of March, eighteen hundred and eighty-four.

MANUEL GONZALEZ.

To General M. DE LA PEÑA,
Secretary of State, Department of Hacienda and Public Credit.

And I communicate it to you for your information and guidance.
Liberty and constitution.
Mexico, 22d of March, 1884.

PEÑA.

SWINDLING A GERMAN BANK.

REPORT BY CONSUL DU BOIS, OF LEIPSIC.

A novel and remarkable case of swindling has just taken place here, and believing that a brief account of the same will be of interest to American bankers and commercial men in general, I take the liberty of transmitting the following statement of the case to the Department.

On the 24th of January, James A. Willer, representing himself as a buyer of fancy goods, doing business on Leonard street, New York, appeared at the banking house of Knauth, Nachod & Kuhne, American bankers here, and asked them to cash the original copy of a draft for £200 sterling, issued by Winslow, Lanier & Co., New York, on Glyn, Mills & Co., London, and also a draft on Paris for 500 francs. The cashier demanded identification, and Willer said that he would go and fetch a merchant friend for that purpose. He departed but never returned; and the next day developed the fact that he was a shrewd and successful swindler. It appears that he bought of Belmont & Co., New York, the following drafts some time in December last:

One draft (in duplicate) for 500 marks on the Allegemeine Deutsche Credit Anstalt, in Leipsic; one draft (in duplicate) for £200 sterling

on Rothschild & Son, London. He purchased also of Winslow, Lanier & Co., New York, one draft (in duplicate) for £200 sterling on Glyn, Mills & Co., London.

He proceeded at once to London, and there succeeded in negotiating the duplicate copies of the drafts at the banks on which they were issued. He then came to Leipsic and drew the 500-mark draft issued by Belmont & Co., on the Allgemeine Deutsche Credit Anstalt here, and at the same time offered the original copy of the draft for £200 sterling which Belmont & Co. had issued on Rothschild & Son, London, the duplicate copy of which, as before stated, had already been accepted and paid by the latter firm.

The Allgemeine Deutsche Credit Anstalt having been notified by Belmont & Co. that they had issued draft for 500 marks on them for Mr. Willer, accepted and paid the original copy of the £200 draft withou, any further identification. The wiley Willer then left Leipsic in haste, and two days afterwards he succeeded in selling in Paris the original copy of the draft for £200 issued by Winslow, Lanier & Co., New Yorkt on Glyn, Mills & Co., London, the duplicate copy having, as before, stated, been paid by the latter firm.

The banks which accepted and paid the originals will lose each £200 by this clever swindler, and this experience will make it impossible for American travelers and buyers to get drafts cashed without full and satisfactory identification.

Those Americans who intend traveling in Germany, England, or France, or anywhere on the Continent, will find it both convenient and advantageous to have letters of credit, or drafts on places where they intend to draw their money in person, as the greatest care will hereafter be taken to secure ample identification of persons wishing drafts cashed.

JAMES T. DU BOIS,
Consul.

CONSULATE OF THE UNITED STATES,
Leipsic, January 31, 1884.

TOBACCO IN SPAIN.

REPORT BY CONSUL-GENERAL REED, OF MADRID.

Having lately received a letter from a firm in the United States requesting information as to the amount of tobacco raised in Spain, and also as to the amount manufactured, I have thought that it might be well to make a brief report upon the subject to the Department.

Tobacco is a monopoly of the Government, and its cultivation in the Peninsula is prohibited. Nearly, if not quite, all of the tobacco consumed in the Peninsula is imported from Cuba, Porto Rico, and the United States. It is brought in the leaf and manufactured at the Government factories. These factories employ many persons, consisting mostly of women and girls, that at Seville (which is the largest) employing about 2,000. This factory is one of the "sights" to be seen by foreigners on visiting that city.

The amount of tobacco manufactured during the year 1883, according to information kindly given me by the "direccion general de estancadas," was 18,182,058 kilograms, of which amount 3,008,000 kilograms were

manufactured into cigars, and 2,231,000 kilograms into cigarettes. The balance was manufactured into smoking and cigarette tobacco.

The Spaniards generally prefer to make their own cigarettes, and the facility and quickness with which they make them cannot well be described. If they buy the cigarette made, they usually undo and make it to suit themseves.

Of the tobacco brought to the Peninsula in 1883, 9,000,000 kilograms came from the United States.

Tobacco is divided into classes, and is furnished the Government by contract to the lowest bidder for a certain time (say from one to three years), and large fortunes have been made by the contractors. A brief statement as to how these contracts are awarded may be of interest.

Due notice is always given in the "Gaceta de Madrid" that a public "subasta" (auction) will be held on a certain day to supply the Government with a certain amount of Cuban, Porto Rican, or American tobacco. On the day named propositions are deposited with the commission, consisting of the "director-general de estancadas" (who is president), two other persons, and secretaries.

For the propositions to be in due form the persons presenting them must be Spanish subjects paying Government and municipal taxes; whenever a foreigner, as is often the case, desires to make a proposition, he must do so through a Spanish subject.

The proposition must be accompanied by a receipt of the proper authority that the applicant has paid his taxes, together with a receipt from the "caja general de depositos" that he has deposited the necessary sum, ranging in amount of from $36,000 to $150,000 (according to the quantity of tobacco to be furnished) as a guarantee to the Government for the fulfillment of the contract. If the applicant obtains the contract the amount remains on deposit. If unsuccessful, the amount is returned next day, less 2 per cent., which is retained by the "caja general de depositos," or in other words by the Government.

The propositions are always handed to the commission a few moments before the hour named for the "subasta," and generally there are from five to seven propositions for each contract. At the hour named the "subasta" opens, and the propositions, in the numerical order in which they have been presented, are handed one by one by president of the commission to the Government notary, who opens reads them aloud to the public. After all have been read, the president awards the contract to the lowest bidder, provided his proposition is found to be in due form. Very explicit directions are always given in the "Gaceta de Madrid" announcing the "subasta" as to the manner of making out the propositions, and if the proposition should vary in the slightest degree from those directions there is always some or test, and the proposition is thrown out.

To show how strictly these directions or rules are carried state that in one of the late "subastas" the person making the unfortunately put in *figures*, instead of *writing* out, as the rule the total amount of his bid. A protest w[illegible] at once made by having the next lowest bid, and the [illegible] as awarded am informed that this often happens [illegible]

The Government has established [illegible] called "estancos" (a kind of booth [illegible] cigarettes, and it is only at these [illegible] person is only allowed to import [illegible] in order to protect the Govern[illegible]

parties. I was informed by the director-general that there was to be a "subasta" to furnish the Government with 27,000,000 kilograms of United States tobacco. The contract will be for three year .

DWIGHT T. REED,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Madrid, March 11, 1884.

BRITISH SHIP-BUILDING DURING 1883.

REPORT BY CONSUL JONES, OF CARDIFF.

The ship-building industries of the United Kingdom have enjoyed an era of prosperity out of comparison with other industries. During the long depression of trade which followed the commercial crisis of 1874 many of the coal mines of the country were worked at a loss, while several were closed altogether. Men in the finished-iron trade who were accounted millionaires ten years ago, have since wound up their affairs by payments of a few shillings in the pound. They are to-day without money or position. Moreover, notwithstanding the gloomy records of the coal and iron industries, their fate had been infinitely worse but for the helping hand extended to them by the great ship-yards of the northeast coast and the Clyde. The adoption of iron as a ship-building material marked the commencement of unprecedented prosperity in British shipping, and when the Suez Canal Company shortened the road to India by 4,000 miles, the position of cargo steamers was substantially improved, and supremacy over our American clipper-ships was at once established. Twenty-five years ago the tonnage of the United Kingdom measured 4,250,000 tons; to-day it amounts to 9,000,000 tons, showing an increase in twenty-five years at a rate exceeding 100 per cent. It is perhaps not remarkable that England should have outstripped the United States and other countries in the building of iron ships, for among her advantages in this regard were great wealth and comparatively cheap money; the close proximity of coal and iron, with the further advantage compared with the United States of a much milder climate, admitting craftsmen to follow their avocations out of doors during the winter season, and the still more important consideration of the cheaper wages of workmen. Under these conditions the tonnage on the British register has continued to increase year by year, with one single exception. In 1881 there was a decrease compared with the preceding year of 1,517 tons. Since that time, however, the rate of progress has been accelerated, and the tonnage launched in 1883 will exceed the output of this or any other country during any time in the history of ship-building. There were added to the British registry during the year 1883, 504 steamers representing 909,760 tons; and removed from the registry 180 iron steamers representing 268,902 tons, leaving a net increase of 324 iron vessels, representing 633,866 tons. The net increase for 1882 was 216 vessels, measuring 497,575 tons. By reference to our table of British tonnage it will be seen that the removal of sailing vessels from the registry compared with those added thereto indicate a decrease of 210 vessels, measuring 64,347 tons. The total of steam tonnage under the British flag, at the beginning of this year amounted to 5,691,560 tons; the aggregate of sailing tonnage at the

same date amounting to 3,516,888 tons, making a grand total of 9,208,448 tons on the British register. The vessels launched during the year 1883 numbered about 900 ships, representing a tonnage of 1,250,000.

The cry of overproduction in connection with shipbuilding has been continuous for at least a dozen years. Meanwhile the yards have continued to multiply, while the volume of tonnage launched has gone on increasing. At last, however, it would seem that the unfavorable prophecy has proved true; it is universally admitted that the outlook in ship-building is of a gloomy character, and the year 1883 will continue to show the greatest amount of British tonnage launched for several years to come. It is superfluous to point out that overproduction means an excess of tonnage out of proportion with the quantity of stuff to be transported, and that the immediate result is the inability of the managing owner to declare a dividend, and the consequent unwillingness of capitalists to make further investments in shipping property. Among the influences at work to bring about what is now admitted to be overproduction have been, first, the French bounty system, whereby a premium was set upon shipping generally. A summarized translation of the French bounty law was incorporated in my report on the growth of British shipping submitted to the Department September, 1882. Now, however, the French Government has adopted more stringent measures than were contemplated by the law of January, 1881; the last mail contract concluded by France contained the stipulation that the ships must be of French construction. French orders, which were numerous upon the books of British builders during 1882 and the first half of 1883, have very greatly diminished. Secondly, the great dividends paid by ship-owners up to within the last two years induced thousands of small capitalists to seek investment in cargo-carrying steamers. Clerks in the employment of successful managing ship-owners embarked in business on their own account, and found but little difficulty in persuading their friends and relations to advance money for the building of ships to be controlled by themselves. This increased demand for tonnage brought about new yards, especially on the north-east coast. Last year was especially fruitful in the establishment of ship-yards on the Tyne and elsewhere; but, unfortunately for many of them, the shadows of depression appeared before a single ship had been launched. In the beginning of 1883 the books of all the ship yards in the country were full of orders for the entire year. Now, however, workmen are receiving notice of a reduction of wages, while in some instances many of the hands are being discharged outright. The years 1881–'82–'83 will in all probability constitute the prosperous and profitable ship-building years of the decade, and in the immediate future we must expect lessened production at diminished profits; then, possibly, absolute loss to builders and the consequent collapse of the weak and "survival of the fittest."

It is interesting to recount instances showing the altered feeling of the public regarding the ship-building firms. With the beginning of last year the firms of Sir William Armstrong and partners and that of Messrs. Charles Mitchell & Co. were united in a limited liability company for the purposes of constructing ships, engines, hydraulic machinery, and guns, and the demand for the stock of the new company was as four to one in excess of that offered to the public. The shares were at a high premium simultaneous with the first "call," and they continued to grow in public favor until £100-shares were selling at £130, and all within nine months of the date of amalgamation. Recently, however,

during last month, the firm of Andrew Leslie & Co., ship-builders on the Tyne, and the extensive engine-works of the Northeastern Engineering Company, all on the northeast coast, contemplated a process of amalgamation similar to that just cited, under what must be considered, from a business point of view, very satisfactory conditions. Messrs. Andrew Leslie & Co. are favorably known throughout England as ship-builders of the highest character and skill. The engineering works are also held in high esteem in every sense, and little doubt was entertained but what the stock of the contemplated liability company would be readily taken up. But the applications for shares were so meager that the scheme had to be abandoned. It is also true that the shares of ship-building works under admirable management and doing a thriving business, with plenty of orders still on their books, are quoted at a discount of 32 per cent., notwithstanding the fact that the dividend-paying position of the firm is 12½ per cent. upon the present prices. This same want of confidence permeates many auxiliary industries.

By reference to the subjoined tables it will be observed that the northeast coast is making greater progress in ship-building than any other district in the United Kingdom. That district now represents 43 firms; shows an output during 1883 of 368 vessels, measuring 577,746 tons, an increase over the preceding year of nearly 24,000 tons. The Clyde, however, while showing an increased output, is obliged to take a second position, both in number of ships and measurement; the particulars concerning the great Scottish river being, in number of firms, 44; vessels built, 326; with a tonnage of 417,881 tons, and showing an increase of about 23,000 tons. Formidable competition in ship-building is confined to these two great districts. The northeast coast possesses an advantage over the Clyde, first, of 10*s.* per ton in the price of iron; while it is asserted that the climate on the northeast coast is much drier than it is on the Clyde, and that, therefore, men are able to follow their employment out of doors throughout the winter and spring with less hindrance and interference than on the Clyde. Mr. Robert Duncan, a Clyde ship-builder, speaking to the associated carpenters and shipwrights of Port Glasgow some time ago, remarked that the iron-workers of the northeast coast are much steadier men than those employed on the Clyde. He continued:

> As a consequence, they get through their work much quicker than we do, and turn out as a rule double the tonnage in proportion to the size of their works of any similar ship-building yard on the Clyde; and for some time back they have been taking contracts even from the Clyde ship-builders, at prices that Clyde ship-builders cannot compete with. We cannot get over the iron difficulty, nor mend our climate, but we can mend our bad habits—drink less, and compete with our east coast brethren in the steadiness and regularity of their work, which will go a long way to compensate for any reduction of wages; and so endeavor to reduce our prices that we may have a chance to get some few orders in the general scramble for the very much smaller number of ships that are likely to be wanted for many a day to come.

It is interesting in this connection to quote a Tyneside ship-builder touching the habits of the men. Says the writer:

> To judge by their appetite for holidays, the workmen feel that their income justifies them in allowing themselves more time for rest, amusement, and rational recreation, and, so far as my observation goes, there is a very considerable reduction in drunkenness, and, a constantly increasing number of men who never get drunk, and who would be quite ashamed to be seen in a state of intoxication.

Such are the relative conditions of things according to the authority of men of the first intelligence in the great rival ship-building divisions of England for the trade of the future.

STEEL SHIPS.

Steel as a ship-building material continues steadily, if gradually, to grow in favor; and with the superior buoyancy of that metal, and the fact that the cost of production is steadily being reduced towards the level of iron, leaves no room to doubt that this lighter and better material is destined, and that soon, largely to supersede iron in ship-building. By reference to the tables it will be observed that the output of steel ships during the year 1883 amounted to 244,462 tons, showing a substantial increase over all preceding years. During the year 1879 18,000 tons of steel vessels were launched in the United Kingdom. In the following year the aggregate of steel tonnage launched was 36,493 tons. In 1881 further progress was made by the launching of 68,366 tons of steel steamers, with an addition of 3 sailing vessels, representing 3,167 tons. In 1882 60 steel vessels were launched, representing a gross tonnage of 108,254 tons; and it will be observed that the increase of 1883 is at the rate of 125 per cent. It will be remembered that when steel rails were first introduced their cost was greatly in excess of iron rails. Now, however, rails can be made cheaper from steel than from iron, and there is but little doubt but what similar results will be soon obtained in the relative cost of production of iron and steel plates. Lloyds' surveyor and inspector has, within a day or two, reported favorably upon the steel made from Cleveland ore. These considerations are worthy the attention of our ship-builders, ship-owners, and manufacturers in the finished iron trade. The difference in cost between iron and steel plates is probably less than 10 per cent. at this time, a fact which satisfactorily proves that in view of the superior quality and carrying power of a steel ship of the same cubic measurement compared with one built of iron, the former is the best value of the two. The clipper ships of America were superseded by the iron cargo steamers of England. By directing our attention to steel, may we not return the compliment once more in another form?

INCREASE IN FOREIGN TONNAGE.

Another very significant feature in connection with the ship-building of 1883 is the increased tonnage built for foreign account. The tonnage built for foreigners during 1882 was 115,756 tons. Last year it represented 189,098 tons. This increase is largely attributable to French orders following the stimulus given to ship-owning by the law of January, 1881; but, as I have already indicated, these orders have gradually fallen off, and the consequences will be felt during the present year, and I know as a matter of fact that French orders on the books of British ship-builders are very few indeed at the present moment.

DISPLACEMENT OF TONNAGE.

It will be interesting here to show the displacement, by way of losses, by some of the foreign customers of this country. They may be approximated as follows: Germany, 60,000 tons; Norway, 60,000; France, 40,000; and Italy, 40,000 tons. Labor in these countries is much cheaper than it is in Great Britain; but France, under the influence of the bounty system, and Norway, from what must be admitted to be natural causes, are the only countries showing an increased output. It is known to the Department that the ship-owners of the United Kingdom, acting through the Ship-owners' Association, London, entered into an agree-

ment with M. Charles A. de Lesseps, acting on behalf of the Suez Canal Company, whereby substantial reductions in the charges upon tonnage passing through the canal have been effected. A certain amount of political significance has also been given to the agreement through the correspondence between Earl Granville and the president of the Suez Canal Company. I append a copy of this agreement as a part of this report.

SHIPPING LEGISLATION.

Shipping legislation will occupy the attention of the present session of Parliament. The president of the Board of Trade is making praiseworthy efforts to reduce the number of lives lost at sea; and to accomplish that end a bill will be introduced in the House of Commons which will provide for the establishment of shipping courts, to be known as "local marine courts"; the provisions of the employers' liability act will be extended to seamen, and the law of insurance will be so regulated as to make ship-owners' policies "contracts of indemnity" only. This prospective bill has been the cause of much public discussion during the winter, and a great deal of friction, not to say bad temper, has been displayed on both sides. It is charged on the one hand that an unscrupulous minority send their ships to sea in order that they may be lost, and that a profit may ensue to the owner through this disgraceful business. The ship-owners answer that the losses at sea are from among the best built and found ships, belonging to the most respectable owners, and that these losses are largely to be attributed to the fact that the Board of Trade has taken from ship-owners the responsibility and right of supervision which properly belongs to them, and that therefore the losses at sea are largely occasioned by the interference, and in some cases the mistakes, of the officers of the Board of Trade. In this I have merely recapitulated what seems to me to be the position assumed by the Board of Trade on the one hand, and by the great bulk of British ship-owners on the other. Personally, I offer no opinion as to which is right and which is wrong. A departmental committee, appointed by the president of the Board of Trade, with Sir Edward Reed as chairman, is now sitting and endeavoring to establish free-board tables to meet the varying requirements of ships, trades, and seasons. If a satisfactory load-line can thus be established, a source of much public scandal will be set at rest. One thing is remarkable in this entire discussion, and that is the very little prominence given in all debates to the very important questions of faulty bulkheads and deck-openings, which are, I venture to think, sources of nearly as many losses at sea as overloading. But it is not improbable that Mr. Chamberlain's shipping act will be made public before this report reaches the Department.

The schedules which form a part of this report are as follows:

1. Ship-building on the Clyde and in Scotland during 1883.
2. Ship-building on the Clyde and in Scotland during the years 1880–'81–'82–'83.
3. Ship-building on the northeast coast during 1883.
4. Ship-building at Chepstow on the Mersey, at Barrow-in-Furness, Whitehaven, Workington, Southampton, Rye, Penarth, Newport, Dundee, Leith, Aberdeen, Grangemouth, Kirkcaldy, and Belfast during 1883.
5. Ship-building on the northeast coast during 1880–'81–'82–'83.

6. A table of comparison between the northeast coast and the Clyde.
7. Steel vessels built during 1883.
8. Vessels built for foreign account in 1883.
9. A table of British tonnage, showing the number and measurement of ships on and removed from the registry in 1883.
10. The memorandum of agreement entered into between the canal company and the ship-owners is also annexed to this report.

EVAN R. JONES,
Consul.

UNITED STATES CONSULATE,
Cardiff, February 15, 1884.

1.—*Ship-building on the Clyde and in Scotland during* 1883.

Name of firm.	Steam vessels.	Sailing vessels.	Gross tonnage.
John Elder & Co	13	....	40,115
Russel & Co	9	19	30,610
R. Napier & Sons	6	.....	23,877
A. Stephen & Sons	11	.....	23,020
W. Denny Brothers	10	.....	22,240
London and Glasgow Company	9	.....	19,798
Scott & Co., Greenock	9	.....	18,685
D. & W. Henderson	8	9	17,740
Aitken & Mansel	8	.....	16,890
Duncan & Co	6	12	16,581
Barclay, Curle & Co	7	1	15,198
A. & J. Inglis	8	.....	14,741
J. G. Thompson	6	.....	13,925
A. MacMillan & Sons	8	5	13,124
Caird & Co	7	.....	12,382
Connel & Co	5	.....	12,001
Dobie & Co	9	1	9,186
Napier, Shanks & Bell	8	1	9,094
Blackwood & Gordon	8	1	8,900
W. B. Thompson	4	1	8,822
John Reid & Co	2	6	6,874
H. Murray & Co	6	.....	6,696
Lobnitz & Co	13	.....	6,662
Macintyre & Co	10	.....	6,537
Murdoch & Murray	8	.....	6,398
D. J. Dunlop & Co	7	.....	6,125
R. Steele & Co	4	2	5,829
Burrell & Sons	5	.....	4,430
Hamilton & Co	.....	4	3,924
Simons & Co	6	.....	3,344
Macarthur & Co	12	3	2,610
Burrell & Stenhouse	1	1	2,520
Seath & Co	7	3	1,615
Fullarton & Co	7	.....	2,211
Campbeltown Company	4	.....	1,826
Hanna, Donald & Wilson	.....	5	875
Scott & Co., Bowling	3	.....	855
Murray Brothers	3	.....	430
Troon Company	.....	2	370
Swan & Co	.....	3	285
McCreadie & McKnight	1	1	236
W. S. Cumming	2	2	180
W. Fyfe	.....	6	107
J. Macadam	1	.....	10
Total	240	86	417,881

Total increase of tonnage on the year 22,732
Total increase in horse-power of engines on the year 52,701

2.—*Ship-building on the Clyde in Scotland during four years.*

Name of firm.	1880.	1881.	1882.	1883.
	Tons.	*Tons.*	*Tons.*	*Tons.*
ler & Co	32, 775	26, 575	31, 686	40, 115
& Sons	19, 005	21, 819	21, 470	23, 020
rothers	18, 112	17, 478	22, 034	22, 240
an & Son	13, 815	14, 256	16, 050	13, 124
ompson	7, 900	27, 100	21, 300	13, 925
& Co	7, 742	13, 856	20, 796	12, 001
Co., Greenock	11, 850	9, 556	17, 180	18, 685
& Sons	5, 866	8, 640	10, 599	23, 877
Co	7, 227	14, 050	12, 624	12, 328
Curle & Co	6, 954	14, 092	17, 114	15, 198
re & Co	8, 935	10, 505	8, 300	6, 537
& Co	2, 700	5, 900	5, 800	3, 344
and Glasgow Company	10, 322	16, 150	14, 365	19, 798
ay & Co	4, 145	5, 452	7, 656	6, 698
& Co	10, 201	14, 640	20, 655	30, 610
Inglis	10, 734	13, 670	20, 017	14, 741
od & Gordon	6, 175	4, 372	6, 408	8, 900
n & Co	3, 042	2, 000	4, 262	3, 924
Henderson	12, 341	12, 620	14, 600	17, 740
Co	4, 674	19, 004	12, 527	9, 186
& Stenhouse	.....	.....	4, 206	2, 520
nlop	3, 000	7, 109	3, 927	6, 125
& Co	5, 500	7, 930	13, 264	16, 581
& Mansell	10, 000	7, 809	8, 908	16, 890
Co	1, 811	6, 890	9, 157	5, 820
& Murray	2, 832	5, 407	5, 647	6, 398
& Co	2, 730	10, 870	7, 648	6, 662
town Company	1, 480	2, 850	2, 700	1, 826
Co	1, 389	1, 179	2, 110	1, 615
Shanks & Bell	2, 625	3, 286	11, 201	9, 094
ners & Co	3, 500	2, 570	.....	.....
Co., Bowling	.....	500	770	855
n & Co	660	1, 370	1, 342	2, 211
bearer	247	400	.....	.....
mpany	173	198	198	379
n Company	332	824	473	.....
ur & Co	500	1, 200	1, 610	2, 616
Co	185	.....	110	285
& Son	.....	1, 346	3, 070	4, 430
hompson & Co	.....	268	2, 970	8, 822
lam	.....	15	70	10
. Fairlie	.....	.....	124	107
mming	.....	.....	30	180
lie & McKnight	.....	.....	.....	236
tal	242, 774	340, 823	395, 149	417, 881

3.—*Ship-building on the northeast coast during* 1883.

[Increase of tonnage over 1882, 23,761.]

Name of firm.	Vessels.	Tons.	Horse-power.
THE TYNE.			
Ship-building and Iron Company	35	61, 133	6, 075
ng, Mitchell & Co	17	23, 584	4, 680
n & Hunter	95	20, 080	2, 040
adhead & Co	12	18, 614	1, 658
& Co	8	17, 617	2, 020
, Richardson & Co	9	16, 558	2, 298
n-Ship-building Company, limited	8	15, 764	1, 516
ger, Davis & Co	8	11, 652	1, 092
l, Macintosh & Boustead	6	11, 531	1, 379
Smith	7	9, 680	943
wards, Sons & Craig	8	4, 450	300
Dobson & Co	1	2, 400	212
Eltringham	8	1, 385	540
& Co	9	1, 071	440
Toward	2	600	120
neral Ferry Company	2	131	60
ith & Co	1	131	60
& Eltringham	1	110	50
xwell	1	12	40
tal	159	216, 573	25, 573

3.—*Ship-building on the northeast coast during* 1883—Continued.

Name of firm.	Vessels.	Tons.	Horse-power.
THE WEAR.			
Joseph L. Thompson & Sons	16	30, 520	2, 800
Short Brothers	14	25, 531	2, 285
James Laing	9	22, 877	2, 360
Robert Thompson & Sons	11	17, 188	1, 780
John Blumer & Co	10	14, 850	1, 319
William Doxford & Sons	9	14, 083	1, 300
Sunderland Ship-building Company	5	12, 482	1, 299
Bartram, Haswell & Co	7	11, 952	1, 190
Wm. Peckersgill & Co	7	10, 688	910
North of England Ship-building Company, limited	5	10, 685	1, 070
Kish, Boolds & Co	8	9, 500	1, 040
Osbourne, Graham & Co	6	8, 745	720
Priestman & Co	6	7, 553	734
S. P. Austin & Son	5	6, 301	590
D. Baxter & Co	5	4, 800	487
Strand Slipway Company	3	4, 558	380
Total	126	212, 313	20, 264

4.—*Ship-building, various.*

THE TEES.			
Raylton, Dixon & Co	16	30, 271	3, 220
M. Pearce & Co	9	22, 671	2, 270
Richardson, Duck & Co	12	21, 413	1, 780
R. Craggs & Sons	4	4, 780	400
William Harkess & Son	3	2, 660	230
Total	44	81, 795	7, 000
WEST HARTLEPOOL.			
William Gray & Co	21	37, 597	3, 550
Edward Withy & Co	12	21, 199	1, 800
Irvine & Co	6	8, 269	780
Total	39	67, 065	6, 130
BLYTH.			
Blyth Ship-building Company, limited	4	5, 869	565
Union Co-operative Society	1	.....	.....
Total	5	5, 869	565
WHITBY.			
Turnbull & Son	8	13, 662	1, 170
HULL.			
The Earles Ship-building Company	12	15, 078	2, 015
Vulcan Iron Works Company	5	4, 130	329
M. E. Wales	4	334	150
Total	21	19, 542	2, 494
CHEPSTOW.			
Finch & Co	5	5, 422	432
THE MERSEY.			
Laird Brothers	13	15, 128	2, 170
W. H. Potter & Son	7	13, 460	.....
T. Royden & Sons	7	12, 369	.....
J. & R. Evans	4	2, 665	238
Duckett & Berry	5	395	15
Cochran & Co	.....	225	.....
Total	36	44, 212	.....
BARROW-IN-FURNESS.			
Barrow Ship-building Company	11	16, 937	1, 796

4.—Ship-building, various—Continued.

Name of firm.	Vessels.	Tons.	Horse-power.
WHITEHAVEN.			
Whitehaven Ship-building Company	6	9,262	560
WORKINGTON.			
R. Williamson & Son	4	4,220	110
SOUTHAMPTON.			
Oswald Mordaunt & Co	15	33,981	1,920
Camper & Nicholson Gosport	1	350	60
Total	16	34,331	1,980
RYE.			
J. C. Hoad	11	828	.....
PENARTH.			
Penarth Ship-building Company	1	64	30
NEWPORT.			
Morday, Carney & Co	3	850	140
DUNDEE.			
Gourlay Brothers	7	13,405	.....
Mr. W. B. Thompson	3	4,038	.....
Pearce Brothers	9	5,540	.....
Stephens & Sons	1	1,403	.....
Total	20	24,386	.....
LEITH.			
Ramage & Ferguson	8	9,510	665
S. & H. Morton & Co	5	3,612	380
Hawthorn & Co	8	3,129	.....
Total	21	16,251	.....
ABERDEEN.			
Hall, Russel & Co	6	6,312	980
A. Hall & Co	6	4,128	480
J. Duthie, Son & Co	4	1,188	255
Total	16	11,628	1,715
GRANGEMOUTH.			
Dobson & Charles	6	4,644	590
KIRKCALDY.			
J. Key & Sons, Kinghorn	7	8,983	1,640
BELFAST.			
Harland & Wolff	13	30,714	2,631
Workman, Clarke & Co	8	8,771	909
Paul Rogers (Carrickfergus)	2	338	.....
McIlwaine & Lewis	4	1,288	235
Total	27	41,111	2,775

5.—*Ship-building on the northeast coast during four years.*

Name of firm.	1880.	1881.	1882.	1883.
THE TYNE.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Palmer & Co	38,117	50,192	60,379	60,113
Armstrong, Mitchell & Co	26,164	80,206	26,002	22,584
Leslie & Co	20,519	23,039	21,322	17,617
J. Readhead & Co	13,777	13,445	19,797	18,614
Swan & Hunter	10,467	13,006	18,592	20,080
Schlesinger, Davis & Co	11,932	12,566	16,979	11,652
Wigham, Richardson & Co	10,759	15,329	16,408	16,558
Tyne Iron Ship-building Company	12,481	10,766	11,451	15,764
Campbell, McIntosh, & Bowstead	.....	2,822	8,946	11,531
T. & W. Smith	4,062	3,163	6,519	9,680
J. T. Eltringham	435	1,618	1,184	1,385
Hepple & Co	.....	97	359	1,071
T. & W. Toward	.....	.....	340	600
Tyne General Ferry Company	.....	.....	76	131
G. K. Smith & Co	.....	129	52	131
J. Softly & Sons	.....	.....	.....	.....
Edward Lindsay & Co	.....	580	.....	.....
John Lindsay	.....	120	.....	.....
J. R. Maxwell	.....	87	.....	12
Lawson & Eltringham	.....	.....	.....	110
H. S. Edwards Sons & Craig	.....	.....	.....	4,450
William Dobson & Co	.....	.....	.....	2,490
Total	148,713	177,165	208,466	216,573
THE WEAR.				
J. L. Thompson	17,880	19,007	27,891	30,529
Short Brothers	17,371	19,050	26,685	25,531
James Laing	16,829	19,413	23,004	22,877
W. Doxford & Son	16,132	16,878	22,231	14,063
R. Thompson & Sons	10,471	16,935	19,920	17,188
Sunderland Ship-building Company	1,480	13,000	17,419	12,482
J. Blumer & Co	5,737	11,240	14,660	14,850
Bartram, Haswell & Co	10,473	10,642	12,195	11,952
Osbourne, Graham & Co	6,874	9,072	11,382	8,745
W. Pickersgill & Sons	4,036	4,423	8,363	10,688
Strand Slipway Company	1,911	2,437	7,674	4,558
Austin & Co	4,661	5,167	5,723	6,301
Hish, Boolds & Co	.....	.....	5,150	9,500
North of England Ship-building Company	.....	.....	4,165	10,685
Baxter & Co	.....	700	3,018	4,800
Priestman & Co	.....	.....	2,964	7,553
R. Foster	2,872	.....	.....	.....
Hardcastle & Co	.....	.....	.....	.....
Mounsey & Horster	.....	.....	.....	.....
Total	116,227	149,959	212,464	212,313
THE TEES.				
Raylton, Dixon & Co	18,016	25,036	27,249	30,271
Pearce & Co	12,955	15,971	17,696	22,671
Richardson, Duck & Co	16,946	17,338	16,182	21,413
Craggs & Son	589	220	3,921	4,780
William Harkness & Son	.....	.....	.....	2,660
Total	48,506	58,565	65,048	81,795
HARTLEPOOL.				
W. Gray & Co	31,003	32,032	38,209	37,507
Withy & Co	10,508	18,408	21,905	21,199
Irvine & Co	6,000	6,100	7,253	8,269
Total	47,511	56,541	68,067	67,065
WHITBY.				
Turnbull & Son	7,984	8,857	13,048	13,662

6.—*Comparative figures*, 1882, 1883.

Place.	Number of firms.	Number of vessels.	Gross tons.
Tyne	19	159	216, 573
Wear	16	126	212, 313
Tees	5	44	81, 795
West Hartlepool	3	39	67, 065
Total	43	368	577, 746
Clyde	44	326	417, 881
Clyde, increase of tonnage 1883 over 1882			22, 732
Northeast ports, increase 1883 over 1882			23, 761

7.—*Steel vessels built in* 1883.

Builders.	Number of vessels.	Tons.
Barrow Ship-building Company	3	6, 057
Dobson & Charles, Grangemouth	3	3, 422
James & George Thompson	6	14, 017
Russel & Co., Port Glasgow	1	567
Harland & Wolf, Belfast	4	14, 503
Alex. Stephen & Sons, Dundee	1	1, 403
Wm. Doxford & Sons, Sunderland	3	4, 877
Edwards & Symes, London	5	250
Edward Finch & Co., limited, Chepton	1	333
Gourlay Bros. & Co., Dundee		8, 292
J. Scott & Co., Greenock	5	12, 814
Robert Steele & Co., Greenock	3	3, 814
T. B. Seath & Co., Glasgow	1	220
R. & H. Green, Blackwall, London	1	68
Raylton, Dixon & Co., Middlesbrough	1	1, 833
Earle's Ship-building and Engineering Works, limited, Hull		3, 696
Laird Bros., Birkenhead		10, 385
Thomas Royden & Sons, Liverpool		3, 639
Sir W. G. Armstrong, Mitchell & Co., limited, Newcastle	11	13, 083
W. B. Thompson, Glasgow	2	4, 721
Campbeltown Shipbuilding Company	2	741
Murdock & Murray, Port Glasgow	1	254
Hamilton & Co., Port Glasgow		740
Napier Shands & Bell Yorker, W. Glasgow	3	8, 816
London and Glasgow Company, limited	1	466
Robert Duncan & Co., Port Glasgow	5	4, 229
Charles Connel & Co., Glasgow	2	2, 995
H. Murray & Co., Dumbarton	1	924
Workman, Clark & Co., limited, Belfast	1	1, 715
John Elder & Co., Glasgow	7	17, 365
J. Macarthur & Co., Paisley	7	1, 667
D. J. Dunlop & Co., Glasgow	3	3, 250
Samunda Bros., Poplar	10	14, 784
Messrs. R. Napier & Sons, Glasgow	3	12, 039
D. & W. Henderson, Patrick, Glasgow	1	46
Aitken & Mansel	3	3, 711
Wm. Denny & Bros., Dumbarton	7	15, 184
Cochran & Co., Birkenhead		
Total		244, 462

8.—*Vessels built for foreign account in* 1883.

Builders.	Number of vessels.	Tons.
Palmer & Co., limited	3	5, 927
Andrew Leslie & Co	1	1, 120
Abercorn Ship-building Company	1	50
Barrow Ship-building Company	2	4, 044
James & George Thompson, Glasgow	1	1, 500
W. Simmons & Co., Renfrew	3	1, 569
Harland & Wolff	2	6, 200
Pickersgill & Sons, Sunderland	1	1, 976
Kish, Boolds & Co	2	2, 550

8.—*Vessels built for foreign account in* 1883—Continued.

Builders.	Number of vessels.	Tons.
S. P. Austin & Son, Sunderland	1	1,257
John Readhead & Co., South Shields	6	9,326
Edwards & Symes, London	6	487
Joseph Thompson & Sons, Sunderland	1	2,870
Gourlay Bros., Dundee	1	1,502
Ramage & Ferguson, Leith	.....	1,057
Alexander Steven & Sons, Goran	5	11,415
R. H. Green, Blackwall, London	1	65
S. H. Morton & Co., Leith	2	2,100
Hepple & Co., North Shields	2	987
John Priestman & Co., Sunderland	2	3,950
Raylton, Dixon & Co., Middlesbrough	5	10,516
John Blumer & Co., Sunderland	1	1,619
Earle's Ship-building Company, Hull	3	5,055
Osborne Graham, Hylton	1	1,367
C. S. Swan & Hunter, Wallsend, Newcastle-on-Tyne	2	1,245
Laird Bros., Birkenhead	.....	10,731
Thomas Royden & Sons, Liverpool	1	600
Blyth Ship-building Company, limited	.....	1,600
J. Macarthur & Co., Paisley	9	1,262
J. D. Dunlop & Co., Port Glasgow	1	675
Arch. Macmillan, Dumbarton	2	2,585
Samuda Bros., Poplar	2	3,040
A. & J. Douglas, Glasgow	3	3,730
R. Napier & Sons, Glasgow	5	20,104
Blackwood & Gordon, Glasgow	7	8,813
Aitken & Mansel, Glasgow	1	165
William Denny & Bros., Dumbarton	5	10,018
R. Thompson & Son, Sunderland	3	5,091
Bartram Haswell & Son	3	5,071
Wigham, Richardson & Co., Newcastle	1	1,399
Yarrow & Co., Poplar	32	.....
W. B. Thompson, Glasgow	2	4,721
Mcintyre & Co., Paisley	8	5,021
Murdock & Murray, Port Glasgow	2	1,262
London and Glasgow Company, limited	2	5,710
Charles Connell & Co	2	2,995
H. Murray & Co., Dumbarton	2	2,201
Lawson & Eltringham, South Shields	1	120
John Elder & Co., Glasgow	1	5,340
Caird & Co., Greenock	4	6,832
Cochrane & Co., Birkenhead	5	62
Total	.....	189,098

9.—*British tonnage,* 1883.

STEAM.

Vessels of 500 to 1,000 tons registry, gross: Added to registry, 75 steamers, 58,429 gross tons; removed from registry, 57 steamers, 40,676 gross tons; net increase, 18 steamers, 17,753 gross tons.

Vessels of over 1,000 tons registry, gross: Added to registry, 429 steamers, 841,331 gross tons; removed from registry, 123 steamers, 225,216 gross tons; net increase, 306 steamers, 616,115 tons; total net increase, 324 vessels, 633,868 tons.

SAIL.

Iron ships, of 250 to 500 tons registry, gross: Added to registry, 3 ships, 1,352 tons; removed from registry, 7 ships, 2,934 tons; net decrease, 4 ships, 1,582 tons.

Wood ships, of 250 to 500 tons registry, gross: Added to registry, 59 ships, 20,732 tons; removed from registry, 180 ships, 63,174 tons; net decrease, 121 ships, 42,442 tons.

Iron ships, of over 500 tons registry, gross: Added to registry, 83 ships, 138,644 tons; removed from registry, 61 ships, 66,690 tons; net increase, 22 ships, 71,954 tons.

Wood ships, of over 500 tons registry, gross: Added to registry, 48 ships, 55,184 tons; removed from registry, 155 ships, 147,467 tons; net decrease, 107 ships, 892,277 tons; total net decrease, 210 vessels, 64,347 tons.

Comparative summary of the years 1880-'81-'82-'83.

Years.	Vessels.	Registry.
se in steamers:		*Gross tons.*
80	152	275,740
81	195	471,069
82	216	497,575
83	324	633,868
ase in sailers:		
80	315	170,489
81	365	162,229
82	242	89,081
83	210	64,347

	Tons.
l steam tonnage under British flag:	
December, 1882:	
Vessels of 500 to 1,000 tons registry	784,827
Vessels of over 1,000 tons registry	4,272,865
Total	5,057,692
December, 1883:	
Vessels of 500 to 1,000 tons registry	802,580
Vessels of over 1,000 tons registry	4,888,980
Total	5,691,560
l sail tonnage under British flag:	
December, 1882:	
Vessels of 250 to 500 tons registry	620,976
Vessels of over 500 tons registry	2,960,529
Total	3,581,505
December, 1883:	
Vessels of 250 to 500 tons registry	576,682
Vessels of over 500 tons registry	2,940,206
Total	3,516,888

-*Memorandum of agreement entered into on November* 30, 1883, *between a committee of e Ship-owners' Association and M. Charles A. de Lesseps, representing the Suez Canal mpany.*

eeting of November 30, 1883, at the offices of the Peninsular and Oriental Steam igation Company. Present, the members of the Association of Steamship Owners ıged in Eastern Trade, Mr. James Laing in the chair; Monsieur Charles Aimé de eps, vice-president of the council of administration of the Compagnie Universelle Canal Maritime de Suez, being also present at this meeting. Monsieur Charles é de Lesseps invited from the gentlemen present an expression of their opinion ı the matters relating to the Suez Canal, whereupon a discussion and an exchange ews having taken place, it was agreed that the twelve following points consti- the conditions desirable for the future administration of the Suez Canal:

That, to prevent delays in the transit between the Mediterranean and the Red and *vice versa*, and also to provide for the expansion of trade, the company shall er sufficiently enlarge the present canal, or construct a second channel, as may be after determined: and that in order to arrive at a proper decision as to the course h should be pursued in this respect, a commission of engineers and ship-owners l be appointed to examine the question, of which not fewer than one-half of the bers shall consist of English engineers and ship-owners.

In addition to the three directors designated by the English Government, seven directors, chosen from among English ship-owners and merchants, shall at once dmitted as members of the board. In order to confer upon these seven directors power of voting which attaches to the present directors, the administration will pose to the shareholders to modify the statutes, and to revert to the figure at first

fixed for the number of directors—namely, 32. In the mean time, and until the necessary formalities shall be accomplished, the administration will invite these seven directors, as soon as they have been chosen, to be present at the meetings of the board.

3. A committee (*comité consultatif*) shall be formed in London, consisting of the English directors. The company will open an office in London. Arrangements will be made for the payment of dues in London.

4. In future appointments in the transit service the company will increase to a large extent the number of officials speaking English.

5. It is understood that the last surtax of 50 centimes shall definitely disappear from the 1st of January, 1884.

6. All expenses resulting from groundings and accidents in the canal shall for the future be borne by the company. From this, however, are to be excepted collisions which may occur between vessels passing through the canal. The canal company also except damage which may be caused to the craft and other appliances of the canal by ships passing, providing that the ships are to blame for such accidents.

7. That from July 1, 1884, the company will entirely extinguish the pilotage dues.

8. From January 1, 1885, the company will diminish the transit dues by 50 centimes, thus reducing the charge from 10 francs to 9 francs 50 centimes, and should the dividend for 1883 amount to more than 18 per cent. a further reduction in the transit dues over and above the 50 centimes referred to shall be made from the same date, namely, January 1, 1885, on the basis of one-half of such dividend above 18 per cent. That the company will thereafter divide with the ship-owners on every succeeding January 1 to the extent of half the profits (whatever the amount of such profits may be) in excess of the amount of profits last previously divided with the ship-owners, which moiety is to be applied to the reduction of dues determined upon the basis of the tonnage which has passed through the canal in the year for which such profit is ascertained. For example, if the accounts for 1884 show profits at the rate of 20 per cent., the ship-owners would be entitled to a reduction in the tariff equal to the net profits of the company, corresponding to 1 per cent. (about 2,800,000 francs) for the year commencing January 1, 1886, over and above the previous reduction; and again, if the profit on the revenue of 1885 should be 21 per cent., a half share of the difference between 20 per cent. and 21 per cent., viz, ½ per cent., say, in round figures, 1,400,000 francs, will go towards the reduction of dues from January 1, 1887, over and above the previous reductions, and this division by moieties will continue until a profit of 25 per cent. is reached. Above such profit of 25 per cent. all the net profits of the company shall be applied to the reduction of dues until such dues are reduced to 5 francs.

9. It is understood that in the foregoing clauses the profit on which the reduction of dues is to be calculated shall include the 5 per cent. paid in the first instance to the shareholders.

10. The reduction already agreed to in favor of ships in ballast is to be confirmed.

11. As to the statutory reserve, the council of the Suez Canal Company will propose that when such reserve shall have reached the sum of 5,000,000 francs the deductions thereafter to be made from the net profits for the benefit of such reserve, and which are now at the rate of 5 per cent., shall in no case exceed a maximum of 3 per cent. on such net profits.

12. It is understood that the calculations on which the aforementioned reductions in the tariff are to be arranged are based upon the present capital of 200,000,000 francs. In the event of any change being made in the amount of such share capital, the basis for the reduction of dues shall be readjusted, so that the diminution in the tariff shall not be adversely affected.

The foregoing points having been agreed upon with Monsieur Charles A. de Lesseps, the committee expressed the opinion that the shares held by the British Government should be made to carry adequate voting power at the meetings of the shareholders, to which Monsieur Charles A. de Lesseps, while reserving his opinion upon this question in its legal aspect, and as regards the principles on which the Suez Canal Company has been constituted, replied that he is not in a position to share this point of view.

The foregoing memorandum of agreement was signed by Mr. James Laing, as chairman of the committee; Mr. Thomas Sutherland, as chairman of the P. and O. Company, and on behalf of Mr. William Mackinnon, chairman of the British India Company; Mr. J. G. S. Anderson, for the Orient Company; Mr. J. B. Westray, honorable secretary of the Association of Steamship Owners trading with the East, for the City Line, the Hall Line, the Clan Line, the Glen Line, the Shire Line, the Harrison Line, and the Ducal Line; Mr. John Glover, Mr. R. S. Donkin, and M. Charles A. de Lesseps.

TRADE ON THE TYNE.

REPORT BY CONSUL LOCKE, OF NEWCASTLE.

SHIP-BUILDING ON THE TYNE.

· special report, dated February 12, 1884, reference was made to ·ession existing in the ship-building trade here, and at the various this consular district. It is a matter of regret that the end of quarter of the new year finds no improvement in the condition ·s. It had been hoped that the depression would prove only ıry, influenced almost entirely by local causes, and that with the of spring there would be a general revival, if not to the full ıf the prosperity of last year, at least to a sound and substantial

hese hopes are not to be realized. Instead of improving, affairs ıg from bad to worse, and there is no telling what the end will is is especially the case in the ship-building trade, upon which r other industries depend. The causes that led to the great de- ship-building here this year were referred to in the report above ıed, and need not be gone into again at this time. The painful l remains that shipping is at a very low ebb, and is constantly ›wer, as will be seen by a glance at the following table, which he

lition of ship-yards on the Tyne, and on other rivers in this consular district.

River.	No. of yards.	Vessels building.	Vacant berths.
.....	18	44	37
.....	16	38	27
lepool	3	9	3
.....	5	14	14
.....	1	2	2
l	43	107	83

yards 83 berths empty on the 1st of April, and every week to the list. Last year at this time not only was every berth oc- but every yard had long orders ahead; in fact, the great majority essels now on the stocks were ordered during the boom of a year

MARINE ENGINEERING.

r this year the marine engineering trade has been very prosper- › large firms on the Tyne working full force full time. This, at nce, in view of the serious falling off in the number of steamers ould appear an anomaly. Were the trade dependent entirely e equipment of new vessels, it would long ago have fallen into ıut old engines, of antique pattern, incapable of doing the service l in these days of rapid transit, are constantly being supplanted and improved engines. This work, in addition to the supplying steamers as have been built this year, has kept the marine-en- ilders very busy up to the present time. This period of plenty

could not, however, last always, and the beginning of the second quarter of the year marks the beginning of its decline. In nearly all the large works, notably those of R. & W. Hawthorn, the employers have been compelled to make a reduction of from 5 to 7 per cent. in wages, a reduction to which, except in one or two instances, the men have cheerfully submitted.

DECREASE OF WAGES.

This general dullness has thrown out of employment thousands of laborers, ship-builders, engineers, and sailors, and has operated strongly against other branches of trade, so that the prospects for furnacemen, iron miners, colliers, and coke-burners is anything but cheerful. There is a general cry for cheaper production to increase the consumption; consequently, wages are everywhere being cut down to the lowest possible point. The laborers, remembering the high wages they received during the past four years of unprecedented prosperity, were at first inclined not to submit. But in almost every instance their better judgment has prevailed, and, realizing that the condition of affairs has materially changed, they have, after careful discussion among themselves and with the representatives of their employers, cheerfully accepted the reductions. There is a falling market, and they wisely conclude that it would be better to accept the inevitable than to vainly struggle against it and increase their own distress by adding their own number to the thousands who are already out of employment.

IMPORTS OF FOOD PRODUCTS.

The wholesale withdrawal of carrying tonnage in consequence of the low rate of freights induced by the overproduction of last year affects, to a certain extent, the trade with the United States. But this inactivity is only temporary. There is a demand here for American products that must be heeded, and in the near future the comparative dullness that now exists in the import and export trade of the Tyneside with the United States will give way to an activity equal even to that of last year, when, according to the official tables just issued by the Tyne Improvement Commission, the trade to and from this port was exceptionally good.

Indian corn.—From these tables it appears that all the corn imported to the Tyne came directly from America, the United States furnishing 637,688 bushels, and British America 35,584 bushels,* making a total of 673,272 bushels against 450,880 bushels in 1882, an increase of 222,392 bushels.

Wheat imports.—Wheat was imported to the extent of 2,760,704 bushels. From—

	Bushels.
United States	934,272
Algeria, Egypt, and African ports	230,656
Germany	223,728
East Indies and China	183,712
South America	173,568
Russia	30,792
British America	12,600
Denmark	3,232
Coastwise	968,144
Total	2,760,704

* The imports from British America were composed of American corn; also shipped from Canada.

Flour imports.—Every year sees an increase in the imports of flour notwithstanding the cheapness with which wheat can be brought to the Tyne from foreign countries. American flour takes a very high rank here, and Northeastern England offers our millers a most excellent field for the development of their foreign trade. With their facilities for making flour, facilities that the Tynesiders do not possess, and which they do not seem inclined to possess, there is no reason why the United States should not more fully supply the constantly increasing demand all over this section for good, cheap flour. As it is now, Germany is the heaviest exporter, having sent to the Tyneside last year 17,333 tons out of a total importation of 57,582 tons, of which the United States supplied only 7,885 tons.

Meat imports.—Of the 6,558 tons of beef, pork, and bacon imported last year, the coastwise receipts amounted to 1,646 tons, 3,761 tons coming from the United States. Our trade in this direction is constantly growing, but is by no manner of means over done.

EXPORTS FROM THE TYNE.

The following table shows the principal exports from the Tyne during 1883, a comparison with the previous year, together with the amount sent to the United States; taken from the official tables above referred to:

Articles.	Total export, 1883.	Total export, 1882.	To the United States, 1883.
	Tons.	*Tons.*	*Tons.*
Alkali and soda ash	76,987	78,564	25,433
Bleaching powder	31,467	29,795	2,851
Soda crystals	119,114	126,301	9,957
Cement	39,798	41,668	3,238
Fire-bricks, &c	138,017	120,264	5,670
Grindstones	9,471	11,434	566
Pig iron	90,619	136,496	13,395
Steel and steel rails	5,256	5,715	1,299
Antimony	852	749	665
Venetian red	3,147	3,041	2,525
Coal	9,348,266	8,687,973	93,624

From the same source it is learned that the number of vessels clearing outward from the Tyne during 1883 aggregated 15,379, with a net register of 6,289,452 tons, showing an increase of 5 per cent. over 1882; and the number of vessels that entered the harbor for refuge during the same time was 547. When the dues on vessels frequenting the Tyne shall have been reduced, as there is every prospect they soon will be, these figures will doubtless be largely increased.

ROBINSON LOCKE,
Consul.

UNITED STATES CONSULATE,
Newcastle-upon-Tyne, April 4, 1884.

MANUFACTURING IN GUAYAQUIL.

REPORT BY CONSUL BEACH, OF GUAYAQUIL.

AMERICAN MANUFACTURES IN ECUADOR.

There are in Guayaquil, the business metropolis of Ecuador, a fair variety of manufactories, but none of a very extensive character, the people relying mainly on the outside world for manufactured supplies. The supplies obtained from the United States are large, and the amount is increased annually. The United States supplies all of the sugar-making machinery, all of the saw-mills, all of the planing-mill machinery, nearly all of the steam-engines, all of the carts, all of the sewing-machines, nearly all of the best saddles and harnesses, all of the street-cars, some of the furniture, all of the store trucks and wheelbarrows, a large share of the axes, many billiard tables, a portion of the musical instruments, &c. The articles supplied from the United States give good satisfaction, and the trade promises to be largely increased. In some instances the lack of thoroughly skilled labor causes great abuse of machinery, and in some cases where the machinery, through bad treatment, fails to perform the service expected of it, the manufacturer of it is blamed. Those selling valuable machinery to come to Ecuador may profitably impress upon the minds of purchasers the importance of employing skillful operatives.

MANUFACTURES OF ECUADOR.

The two leading manufacturing establishments of Guayaquil are combined steam saw-mills, foundries, and machine shops. The two concerns use gang and circular saws, both of which work slowly and indifferently because of the remarkable springy nature of the wood, a log 12 feet long springing from 2 to 4 inches out of line when a slab is taken off. The two mills turn out about 150,000 feet of lumber per year, which is sold at an average of $35 per M. The foundry and machine-shop work is mostly in the line of repairs, and is quite extensive. Castings average to sell at 15 cents a pound. About 60 men are employed in the two establishments, whose wages range from 70 cents to $3 a day, United States currency.

There is one steam planing, matching, turning, and small sawing establishment, whose entire outfit was obtained in the United States. It does the general work of such an establishment, but mainly for carpenters and builders. Fourteen persons are employed, at from 50 cents to $2 per day.

There are two ice manufactories, both of whose machinery was obtained in New York. They daily turn out a total of 3,000 pounds of ice, which is sold at 7 cents a pound. Each concern employs four men, with wages ranging from $1 to $2 per day.

Seven small chocolate manufacturing concerns give employment to from three to seven persons each. Two qualities of chocolate are made, and nearly all that is made is consumed in Ecuador. The workmen are paid from 70 cents to $1 per day.

There are two soda-water bottling establishments, turning out respectively 40 and 80 dozen per day, which sells at 70 cents per dozen.

ne employs three and the other five persons, at the range of wages eviously given.

The city gas works were built by citizens of the United States, but e now owned by Ecuadorians. Twenty persons are employed at e usual rate of wages. The average daily production is 20,000 feet. ne coal used is obtained from England. The city pays $250 per month r street lighting, and individuals are charged $10 per 1,000 feet. Ex-pt in stores, there are but few individual customers. The best class dwellings is lighted by kerosene, and the poorer class by candles.

There is but one distillery in the city, and that a small concern, em-oying but two men, at $2 a day. It transforms per day 40 gallons of *uardiente* into *mayorca*—a species of rum that is extensively consumed y the poorer class of the native population. Nearly every large sugar state has a small distillery.

About one hundred men are employed in Guayaquil with whip saws transforming hewn timber into boards and plank. The timber is halk-lined on two sides for the thickness of the lumber desired, and then ne sawyers follow the lines without regard to the spring of the timber. hey work by the "cut," and earn from $1.50 to $2 a day.

The timber of Ecuador is excellently adapted for vessel building, and essel construction might be made an important industry. The vessels ually built are small craft of from 5 to 50 tons, to be used without ils on the upper rivers. At long intervals vessels as large as 100 as have been built. There are no obstacles to building vessels of veral hundred tons' burden. About one hundred men are employed boat building and repairing, who receive from 70 cents to $3 a day, ording to skill. The sail-cloth sold in market, and tar, pitch, tur-ntine, &c., used in new work and repairs, are principally supplied m the United States.

n Ecuador there 17 journals, classified as follows: 2 dailies, 3 tri-eklies, 11 weeklies, 1 monthly. The presses and type for these rnals were all obtained in the United States and give general satis-tion. Germany furnishes the paper and most of the ink, a small per-tage of the latter being obtained in New York.

As miscellaneous it may be stated that there are 29 cigar manufac-ies, 27 carpenter shops, 4 still manufactories, 20 tin shops, 39 tailor ops, 6 cooper shops, 47 shoe shops, 7 candle factories, and 9 soap tories. Most of these are small concerns employing from one to ree persons, but as a whole contributing largely to the activity and osperity of the city.

HORATIO N. BEACH,
Consul.

UNITED STATES CONSULATE,
Guayaquil, April 8, 1884.

ECUADORIAN INSTITUTIONS AND ENTERPRISES.

REPORTED BY CONSUL BEACH, OF GUAYAQUIL.

In nearly all countries there are institutions and enterprises which ery clearly indicate the extent of developed business resources, a nowledge of which conveys to other nations a correct impression of a tion's progress. This is valuable knowledge for nations holding siness relations with each other, as it shows when the natural order

is not interrupted the extent of internal institutions and systems having a direct relation to international trade and commerce. For the purpose of throwing some light on the subject I will describe the most important institutions and industries of Ecuador, prefacing what I shall say by the statement that the country has about 1,000,000 inhabitants, and that the national domain covers about 40,000 square miles, a considerable part of which is fertile. The value of the exports for the year 1883 was $4,724,246.55, in United States currency.

THE BANKING INSTITUTIONS.

There are in Ecuador three banks of issue, and one making loans on real estate. Two of the banks of issue are located at Quito, and jointly have a capital of 750,000 pesos (Ecuadorian dollars, the currency hereafter mentioned in this report), the peso being worth about 70 cents in United States money. The other bank of circulating issue, the Bank of Ecuador, is at Guayaquil. It has a subscription or stock capital of $1,000,000, to which has been added $2,000,000 more by a provision of its charter which permits it to issue two paper dollars for each dollar of its capital. The bank charges 10 per cent. interest on six months' paper, and 9 per cent. on three months or less. On yearly deposits it pays 6 per cent. interest, on six months' deposits 4 per cent., but nothing on deposits subject to sight draft. On foreign exchange it charges about 3 per cent. Its stockholders receive an annual dividend of 33⅓ per cent.—probably the most profitable banking in the world.

The real-estate bank is called "Banco de Credito Hipotecario," which in English means Bank of Hypothecated Credit. It is organized under a charter from the National Congress, and without capital. Its method of doing business is to make loans on real estate security for periods of twenty-one years at 12 per cent., interest to be paid annually, but the payment of interest for the twenty-one years to cancel the whole indebtedness. The bank receives no deposits, and when a loan is made issues its certificates of indebtedness, with interest payable quarterly at 8 per cent., the amount of the certificates also to be paid at the end of twenty-one years. These certificates can always be sold at par. The difference between the rate of interest paid and received by the bank pays the amount of the loan and affords a large profit to the bank managers. Apparently it is a peculiar system of banking on real-estate security.

THE RAILROADS.

In Ecuador there are one general railroad and four street-car lines. The former is a Government enterprise upon which work was commenced in 1872 and suspended in 1877. At its inception this line was designed to form part of an improved means of communication between Guayaquil and Quito, whole distance 270 miles. Proceeding northerly from Guayaquil for twelve miles the small village of Pueblo Nuevo on the small river Taguachi is reached, and to which place small steamboats run. At this place the railroad of 3-feet gauge was started (now its southern terminus) and built northerly and put in bad running order for about 40 miles. As far as constructed the grade is nearly level. It was designed to build the road about 40 miles further, ascending to an elevation of over 7,000 feet, but the frequently recurring revolutions have stopped general progress, and that part of the work constructed is in a dilapidated condition. Part of the plan was to construct a good wagon-road from the end of the 80 miles of railroad to Quito, and which

wagon-road was constructed. But the impassable 40 miles renders the whole route unserviceable, and both the wagon-road and the railroad are sources of great national loss. There was expended on the railroad about $3,000,000, and on the wagon-road about $1,350,000. The transportation of passengers and merchandise between Guayaquil and Quito is as formerly—between Guayaquil and Bodagus by river steamboat, 60 miles; and between Bodagus and Quito, 210 miles, on horseback or muleback, average seven days' journey, at a cost per passenger one way of from $50 to $100; and the transportation of merchandise costs $4 per 100 pounds.

All the street-car lines of Ecuador are in Guayaquil, and which have been built by individual enterprise, the first one by citizens of the United States. The city, though having 30,000 population, is so compactly built that all the lines are short. To the present four lines there is to be added a fifth as soon as material ordered arrives. All the lines start from a central plaza, one passing each way lengthwise of the city, and two rearward—one to a bathing resort, and the other to the cemeteries. The longest line is 1¼ miles. None of the lines have turnouts, one car usually doing the business of a line; but if more are required they are run the same way at the same time, three being sometimes run in making a trip. The total length of the car lines is 4½ miles. The cars are made in the United States. They are drawn by mules. The fare is 5 cents, except to the bathing resort, where 20 cents for a round trip is charged, but which includes the use of a bathing suit and bath house. The lines are operated cheaply, and are understood to be highly profitable.

TELEGRAPHS.

In Ecuador there are two telegraph lines; one, nearly completed, to extend from Guayaquil to Quito, 270 miles in length, owned and to be operated by the National Government; the other the Central and South American Telegraph Company, whose lines extend in Ecuador from Guayaquil to the coast, distance 118 miles, where the line connects with the cable.

The Government line is a single wire. Its cost is not known, and its rate of charges is not yet established. A concession has been made to individuals for the construction of about 300 miles of line in the lower provinces, but the enterprise gives no sign of progress.

The Central and South American Telegraph Company is incorporated under the laws of the United States, and is usually denominated a United States enterprise, though nearly all if not quite all of its stock is held by Englishmen, and by whom it is managed. Its land line is a single wire. The company does a large business at Guayaquil, and its general business is very profitable. The charge between Guayaquil and New York is $1.77 per word, in United States currency, date and signature counted.

RIVER TRANSPORTATION.

Small as Ecuador is in domain, it has no less than 91 rivers, about one-third to some extent navigable, and which afford for a large section of country a reliable and economic means of transportation. Many of the rivers are mere tributaries to navigable streams; but the latter have on the western slope of the Andes utilized navigation of about 600 miles; and on the western slope about 3,000 miles that are navigable, scarcely all utilized. In fact, on the eastern slope no custom-houses are maintained, and what little merchandise passes to and from the country

by way of the Amazon and its Ecuadorian tributaries, is not taken into account by the National Government. The western slope river navigation system centers at Guayaquil. This navigation is carried by the means of small steamboats, chatas, rafts, and canoes. There are employed eighteen steamboats, ranging from 25 to 125 tons. The "chatas" are boats built somewhat of the lighter style, without sails, which carry from 4 to 50 tons, and of which there are twenty. The rafts are an important element in river transportation, and are constructed of both bamboo and balsa. The latter is a species of timber having a floating capacity about equal to cork. A log 40 feet long and 15 inches in diameter is estimated to carry 2 tons. Twenty or thirty of these logs lashed together will carry quite a load, and are made useful for transportation and as a family residence. There are sixteen large "balsas," for thus they are called, engaged in freighting. The bamboo rafts likewise carry considerable loads, and are sold at Guayaquil to be used (as roofing boards and lath) in the erection of buildings. The canoes, which carry from 500 to 5,000 pounds, are not an insignificant element in the water transportation system. They come fully laden, many of them from the by-ways, with valuable loads, and return with purchased supplies. The facilities of river navigation are explained by the statement that the tide is rapid both ways, often running 5 miles an hour, and that a raft or boat without any physical propulsion will average to make 24 miles in a tide, or about twice that distance in a day. All the steamboats take advantage of favorable tides. By the diversified system of river navigation as set forth, and which is highly advantageous to the country, most of the interior products consumed at Guayaquil, or exported, are received, and all imports are distributed to the extent of water communication.

HORATIO N. BEACH,
Consul.

UNITED STATES CONSULATE,
Guayaquil, March 1, 1884.

MALTA AND THE MALTESE.

REPORT BY CONSUL WORTHINGTON.

The population of the islands of Malta at the last census of April 3, 1881, exclusive of visitors and the British military and naval forces, but including the native regiment of artillery, was 149,782, of whom 73,430 are males and 76,352 females, an excess of the latter of 2,922.

The total population is now estimated to be 150,000. At the date of the last census the three Maltese islands contained:

Islands.	Persons.	Males.	Females.
Malta	132,129	65,027	67,102
Gozo	17,620	8,383	9,237
Comino	33	20	13

*The enumeration of British war forces is as follows: Troops—officers, 194; men, 4,462. Navy—officers and men on board Her Majesty's ships, 4,534; while the wives and children of officers and men in the garrison number 851.

ıe nationality of the population was: Maltese, 147,209; British, 3; foreigners, 1,065.

ıe ages of the population were: Under 5 years, 16,714; of 5 and un- 15, 29,304; of 15 and under 20, 13,602; of 20 and under 30, 26,579; 0 and under 50, 23,576; of 50 and under 70, 22,080; of 70 and up- ds, 6,917.

ıe social condition of the people was:

Condition.	Persons.	Males.	Females.
.....	89,526	45,495	44,031
ıd.....	51,063	25,359	25,704
ved	9,193	2,576	6,617

ıd a conjugal summary shows:

ı:	
Iarried.....	25,359
Inmarried.....	22,124
Vidowers.....	2,576
Total.....	50,059
.les:	
Iarried	25,704
Inmarried.....	21,384
Vidows	6,617
Total.....	53,705

: a grand total of 60,256 married out of a population of 149,728. ı interesting to note that 71 of the married males and 64 of the ried females are between fifteen and twenty years of age, and that e are between these ages 15 widows. Three hundred and forty-five ands must have been out of the islands on census day, so that it fe to assume that the number of existing married couples are repre- ed by the 25,704 wives—a proportion of married couples to the ılation enumerated of the age of 15 years and upwards of 24.79 per ., or 51.14 per 100 men, and 47.86 per 100 women.

ıere is an excess of widows over widowers (the total of both being 3) of 4,041, which is accounted for by the fact that more widowers arry than widows, probably because of the number of children, ı or less numerous, but always numerous, which a widow is left essed of. To 10 husbands there is one widower, and to 4 wives e is one widow. Deducting 23,371 boys and 22,647 girls under en years of age from 45,495 males and 44,031 females returned ngle, the number of bachelors becomes 22,124 and the number of sters 21,384. With these numbers are included 1,140 men living elibacy, being members of the Roman Catholic clergy, and 220 nuns sisters. For every 100 husbands there are 81.69 bachelors, and for y 100 wives 82.36 spinsters. For every 100 returned as single there

under 15 years.....	51.37
elors.....	48.63
	100.00
.....	51.43
sters	38.57
	100.00

Or for all persons enumerated there are—

Males, single	69.96
Married	34.53
Widowers	03.51
	100.00
Females, single	57.67
Married	33.67
Widows	08.66
	100.00

The number of children registered as born during the ten years ending with the year 1880 was—

	Boys.	Girls.	Total.
Born in wedlock	25,169	23,143	48,3[illegible]
Twins and triplets born in wedlock	502	403	[illegible]
Born out of wedlock	378	381	[illegible]
Still-born	658	466	1,[illegible]
Total	26,707	24,493	51,2[illegible]

The boys born are in excess of the girls by 2,214, but this disproportion disappears at fifteen years, owing to the higher rate of mortality of the boys, the number of men and women becoming even up to 40, and then the women exceed the men in increasing proportion as they advance in age. The excess of births over deaths during the ten years ending with the year 1880 is 12,222 while the annual average proportion of births was 5,120. Taking the proportion of deaths and births for the same period and there were 131.12 births for every 100 deaths.

To 100 wives of the ages between fifteen and fifty-five are born annually 24 children. The average annual proportion of deaths is 3,89[illegible], and for every 100 births there are 76.11 deaths. The marriages in the ten years mentioned were 9,317, an annual average of 931.7.

The occupation of the population is registered as follows:

Class.	Persons.	Males.	Females.
Professional	4,631	4,031	600
Domestic	34,272	2,759	31,513
Commercial	21,636	19,980	1,656
Agricultural	15,990	12,543	3,447
Industrial	31,125	12,014	19,111
Indefinite and non-productive	42,128	22,103	20,025

The professional class includes "those persons who are rendering a direct service to mankind and satisfying their intellectual, moral, and devotional wants." 1,176 men and 167 women of this class are employed by the colonial government; 364 men belong to the native artillery regiment; 2,076 males and 404 females are engaged in the liberal professions, literature, science, and arts; 429 Government pensioners are put down in this class. The police, numbering 462, are "professionals," and so also are the 1,140 priests, monks, and friars, and the 220 nuns and sisters. The one Jewish rabbi, the one his excellency the governor, the 248 lawyers and notaries, the 57 physicians, the 5 dentists, the 61 midwives, the 8 journalists, the 19 photographers, the 168 teachers and schoolmasters (45 of whom are females), the 270 musicians and

ctors (14 being women), engineers, high-class mechanics and land-surveyors, together with "662 wives and others engaged in household uties," are all categoried in the professional class.

Of the domestic class, persons engaged in "entertaining and performng personal offices for man" are included, of which there are—

Occupation.	Males.	Females.
ıkeepers	53	11
airdressers and barbers	206	.....
ooks	348	64
ervants, nurses, and grooms	2,150	2,423

And the "wives and others engaged in household duties" of this class umber 2,941.

The commercial class includes bankers, merchants, and dealers to the umber of 3,324, and 2,652 shop-keepers (903 of them females), shiphandlers, hucksters, accountants, clerks, 1,388 mariners, 3,661 boatnen and fishermen, 5,475 coal-heavers, porters, and carriers (182 being romen), 912 carters, 19 consuls-general and consuls of foreign powers, nd 12,319 "wives and others engaged in household duties."

In the agricultural class there are—

Occupation.	Males.	Females.
easant proprietors	2,590	340
ardeners	209	.....
aborers in the field	9,207	2,987
hepherds and goat-herds	537	120

And 3,676 "wives and others engaged in household duties."

The industrial class is composed of book-sellers, printers, musical-nstrument makers, lithographers, watch and clock makers, armorers, saddlers, goldsmiths, gilders, carpenters, house painters, fireworks makers, 2 (one of each sex); tailors, 927; shoemakers, 886; candle makers; 3,280 cotton spinners and weavers, who do their spinning and weaving by hand in their own houses; 900 washermen and laundresses, 95 sextons; 144 millers, whose round-towered wind-mills can work only when the winds blow, and even then they—like the mills of the gods—grind slowly, but—unlike the fabled mills—grind exceedingly coarse; sail-makers; cigar-makers, who number 44 men and 989 females; 318 scavengers and street sweepers, and, not to enumerate further, 7,167 "wives and others engaged in household duties."

The indefinite and non-productive class is an interesting one, embracing as it does the extremes of social life and human occupation. It is mainly composed of—

Non-producers.	Males.	Females.
Nobles	26	24
Gentry and proprietors	670	991
Scholars	6,553	5,897
Mendicants by profession	355	370
Fallen women	.....	108
In hospitals	1,030	1,196
In prisons	199	19
Children	12,550	10,688

And 1,560 "persons having no occupation, from age or infirmity or other causes." The absence of "wives and others engaged in household duties" in this class should perhaps be noticed.

The religious denominations of the population are thus tabled:

Sex.	All denominations.	Roman Catholic.	Protestant.	Greek Church.	Hebrew.	Mohammedan.
Males:						
Maltese	72,038	72,038	.....	.....	.....	.....
British	714	159	506	12	37	.....
Foreigners	678	572	18	59	35	.....
	73,430	72,759	524	71	72	.....
Females:						
Maltese	75,171	75,171	.....	.....	.....	.....
British	794	129	611	12	42	.....
Foreigners	387	327	4	24	31	.....
Grand total	149,782	148,386	1,139	107	145	5

The unanimity of the Maltese in remaining in the Roman Catholic fold, not a single exception being recorded, is remarkable, and in this connection, mindful of the statements so often made in newspapers and in private to the effect that Malta is overrun by priests—their numbers being variously estimated from 4,000 to 10,000, according to the imaginative ability or erroneous information of the narrator—the following reliable figures may not come amiss:

The Roman Catholic clergy enumerated in the three islands is thus stated:

Archbishop	1
Bishop	1
Priests in holy orders	676
Monks and friars, including novices and lay brothers	462
Total	1,140

There are 20 convents in the islands and 5 nunneries, all of which are still conducted on the system and after the manner of medieval times, the nuns never emerging from their secluded confinement. Of the total 172 cloistered nuns, 12 are of British extraction; the average ages of the whole number of nuns is 45¼ years; there are 4 nuns under 20, and 4 over 75 years of age. Of the 462 monks, 12 are British born. The proportion per 1,000 on the whole Roman Catholic population of these islands is 7.68 persons living by the altar, and 28.25 per cent on the male portion of the entire population returned under the professional class. The ratio of cloistered nuns on the Roman Catholic female population is 2 per 1,000, and 28.66 per cent. on the portion of the professional class. Sisters of several orders, who are exclusively engaged in the teaching of young children, or attending the sick, the poor, and infirm, are 76 in number.

There are 101 Roman Catholic churches and detached chapels in the islands, some of them of massive build, striking proportions, and elaborately decorated and appointed. St. Paul's church in Valletta possesses upwards of $1,000,000 in statues, altar articles, and jeweled robes. The old historic church of St. John, in which the grand masters and many

of the Knights of Malta are interred, under costly monuments of bronze and marble, was robbed of its sacred valuables by Napoleon I in 1798, yet still it is as rich in treasures as it is in historic memories. In the little village of Musta, near the bay in which St. Paul was wrecked, stands a church having the fourth dome in size in the world.

Of the 1,140 Roman Catholic clergy, less than 40 could speak, read, and write in English at the date of the census, while 719 could speak, read, and write Italian only, and 323 both Italian and Maltese.

The Maltese language or dialect spoken by the native Maltese is Oriental in its origin, Arabic in its chief characteristics, but yet forming a peculiar language of its own, just as the Maltese people form a distinct nation by themselves. Though Oriental in speech and in many of their habits of life, they are the stanchest of Catholics, and hence through their religion, similarity of climate, and proximity, have much in common with Italy. All the Maltese speak (though but few can read) the Maltese language, which is the sole language of six-sevenths of the inhabitants. Through centuries of foreign occupation—Greek, Roman, Saracenic, Norman, Spanish—through the rule of the Knights of St. John, and during the seventy years which have elapsed since Malta became an integral part of the British Empire, the language has preserved, although until within comparatively recent times unwritten, its universality, vitality, and characteristic vigor. Although it has incorporated in itself many words which are derived from the various languages with which it has been brought in contact, it has clothed these words in Maltese dress and colors, and compelled them to accept its inflexions, and does not, it is said, offer a single instance of one of its own forms—phonetic, etymological, or idiomatic—having been corrupted by association with its competitors. It has at different times been sought to discourage the Maltese language, particularly by the Italians during the last forty years, who have endeavored to make the Italian the national language of the islands, but without any apparent success.

All of the 150,000 native Maltese speak Maltese, 130,000 to 140,000 of whom speak nothing else. Of the 14 small newspapers published in Malta—all in the city of Valletta—two are published in the Maltese language, one being a daily. The highest circulation attained by any one of the 14 newspapers does not exceed 250. Three of the weeklies are in English, the price per single copy being 10 cents and 12 cents.

Until recently, circumstances, based somewhat on the grammatical difficulty of systematically writing the Maltese language, and the unsettled state of things in the islands relating to the language question, together with the course pursued by parents of putting their children at work to help till the fields, drive carts, peddle, and assist generally in earning their living, have had their influence in restraining the progress of education among the people, which, generally speaking, is at a low ebb. In many of the villages most of the learning that exists is confined to the clergy, very few besides being able to read and write. Until of late years the common people, especially in the country, have enjoyed but scanty means of obtaining an education, but now Government schools, under the skillful and indefatigable exertions of Hon. Sigismondo Savona, an enlightened and cultured Maltese gentleman, backed by the local and Imperial Governments, are doing zealous and efficient work in educating the young Maltese. While English and Italian are being vigorously taught (as these are the languages of commerce and law), the Maltese language is not neglected. I think it would be a great pity to break up and expunge the native language, as is advocated by a few Italian-Maltese gentlemen of influence, whose desire is to substitute the language

of Italy in its stead—a pity, because Maltese is a language that has been brought down from centuries, and is a rare monument of antiquity worthy of study and culture. Less than any other Eastern language has it been inoculated with any Western speech. Such as it is, it stands alone in the dialects of the world.

The aggregate number of persons returned as able to speak, read, and write is 24,287, of whom 14,955 are males and 9,332 females. The percentage, therefore, on the native population is as follows: Able to speak, read, and write, 16.50; illiterate, 83.50.

The proficiency of this 16.50 per cent. in speaking other than their native language is shown in the table that follows:

	English.		Italian.		Both languages.	
	Males.	Females.	Males.	Females.	Males.	Females.
Able to speak	1,732	449	428	445	847	237
Able to read	91	94	1,424	1,457	421	297
Able to speak and read	43	39	170	255	128	92
Able to speak, read, and write	486	357	4,098	3,281	5,087	2,329
Total	2,352	939	6,120	5,438	6,483	2,955
Aggregate	3,291		11,558		9,438	

The English language, therefore, is spoken, read, or written at the rate of 52.98 in 100 of the educated portion, and of 8.64 in 100 of the whole native population. The Italian language similarly summarized shows a ratio of 86.75 in 100 of the educated and 14.26 in 100 of the total natives. Many boys and girls attending the elementary schools belong to the poorer classes, and before they can acquire a competent knowledge of any of the languages taught they are generally taken away by their parents, who apprentice them to some trade or industrial pursuit. Consequently, the child ripening in years forgets the Italian and English which he has gained, and he grows up to speak only the native dialect of his kith and kin, with whom are knitted the ties of his existence and affections. Double the number of native population, however, now know English than knew it twenty years ago. The percentages of illiterate persons to the whole population may be summarized thus:

	Per cent.
Professional class	30.94
Domestic class	83.05
Commercial class	80.00
Agricultural class	99.96
Industrial class	89.66
Indefinite and non-productive class	82.73

The number of scholars has increased rapidly in the last forty years:

1842 there were	3,633
1851 there were	6,047
1861 there were	9,029
1871 there were	10,424
1881 there were	12,390

The amount of money devoted by the local government for the educational department in 1882 was £16,863 10*s.* 4*d.*

That part of the whole population which is exclusively supported by

the Government with public money in charitable and penal institutions is thus returned:

Institutions.	Males.	Females.
Orphanages:		
Foundling Hospital	6	13
Orphan Asylum	56	78
Hospital for the sick	316	298
Asylums for the destitute:		
Incurables	98	128
Poor-houses (2)	474	366
Refuge—Magdalen Asylum		11
Prison	172	14

The number of insane in the islands, in hospital, is 382—194 males and 188 females, or a proportion of 2.55 per 1,000 to the entire population. The total insane of the islands kept at home and in hospital is the high rate of 4.06 per 1,000 persons, or 1 in 219. With regard to the conjugal condition of the hospital insane, it is interesting to note that there are 140 bachelors, 51 husbands, 3 widowers, 114 spinsters, 56 wives, 18 widows.

Of the 172 male prisoners in the islands, 150 are Maltese, 13 British, and 9 scattering; and the crimes committed by them are chiefly theft (44), doing bodily harm (34), manslaughter (17), blasphemy (10), disturbances and attempted theft (18). The number of female prisoners is exceedingly small, because female criminals are very rare in Malta; of the 14 enumerated, 5 are in for "insults and obscene words," and 2 for theft. The prisons (one civil and one military—the latter being devoted to British soldiers and sailors solely) are large, roomy, healthy, very thick-walled buildings, built of the soft, yellow Maltese stone, having ample exercise courts and surrounded by very high walls. In the civil prison of Malta there is at present, under sentence for life, a Narragansett Indian from Martha's Vineyard, Massachusetts. This particularly native American, while serving on a British wrecking vessel in the Falkland Islands, killed a companion sailor.

The total number of blind people in Malta is 227 males and 226 females, their ratio to the population being 3.02 per 1,000, or 1 in 331. The deaf and dumb appear to have been too few to enumerate. The total infirm population, 2,063, is 1.38 per cent. of the whole, or 1 inefficient person in 73.

Among the 1,065 foreigners enumerated as residents (not reckoning at all the British garrison), 756 are Italians, 78 French, 69 Greeks, 77 Ottomans, and the "1 American" is a sister in a charitable institution. The Italians just mentioned are mainly from Sicily, that island being distant only 60 miles from Malta; 138 of the Italians are Jesuit priests and monks.

The density of the population is to be remarked. The total extent of the land surface of the Malta group of islands is about 117 square miles, and the proportion of the population (exclusive always of Her Majesty's troops, and visitors) is in Malta 1,443 and in Gozo 684 to the square mile.

Valletta contains the greatest plethora of population on account of its being the principal city, wherein all the commerce and industrial arts of the islands are concentrated. The area of the city is 0.318 of one square mile and its population is 24,854, a proportion of 78,157 persons to the square mile. There is one specially populous quarter of Valletta, known as the "Manderaggio," whose area is 0.004 of a square mile, or 2.56 acres, wherein dwell 2,544 persons—a proportion of 636,000

souls to the square mile! The "district of Valletta," which is composed of the principal city and seven adjoining towns, contains 42,782 persons; add to this district that of the "Cottonera," which lies just across the Grand Harbor (containing in itself 24,802 persons), and it results that 67,584 of the 150,000 inhabitants live within short cannon shot of the governor's palace in the center of the city. The Cottonera district was built up and inhabited before the city of Valletta, Valletta having been begun in 1565.

Citta Vecchia, or Notabile, is the old citadel city of the island, in which stands the imposing and elegant cathedral of St. Paul, surrounded by ancient ramparts, formidable in their day, but crumbling now. This city is 7½ miles from Valletta, in the center of the island of Malta, and contains 6,200 inhabitants.

The other 24 *casali*, or villages, are situated at small distances from each other over the island; Carmi contains 6,556, Birchircara 6,513, Zeitun 6,091, while the smallest village, Sofi, has but 272 souls. In the island of Gozo the largest town is Rabato, with 5,820 persons.

The dwelling houses in the cities and villages are always of stone, not a wooden structure being in the islands. The houses in the villages are usually of unlovely appearance, but always of substantial construction. They are low, often unwindowed on their fronts and sides, always with an unroofed court in the center, floored and roofed and partitioned with stone. Fire-places are infrequent, iron stoves unknown—the cooking being done in a foot-square, foot-high stone pot, with a grating let halfway down its open center, with charcoal for fuel. The occasional villas and palaces in the country, and also the homes of the richer people in the city of Valletta, are handsome, convenient, and often extensive mansions. The "inns," or "auberges," built by the Knights in the sixteenth and seventeenth centuries, in Valletta, are enormous buildings, with wide halls, fine, large apartments, great paved courts, and with beautiful façades on the street, that delight the eye by their grace and colors. The ceilings in these "inns," as well as those in numerous private houses, are very often 24 feet in height. These inns, once the headquarters for the various languages of Knights, are now regimental headquarters, club houses, or palaces occupied by British army officers of high rank.

In Valletta 85 individuals are returned as having no homes. They are not paupers, but men and boys who work early in the markets, sleeping under arcades and porticoes—two of the men being reported as living in empty casks at the Marina wharves. The number of persons to a habitation in the city of Valletta is 6.60; in the islands, 5.44.

The population of the islands has steadily increased in numbers since the Knights Hospitallers of St. John of Jerusalem took possession, in spite of divers destructive visitations of cholera, plague, and wars. In 1530 the inhabitants numbered 15,000; in 1565, after the memorable siege of the Knights by the Turks, the number was reduced to 10,000; in the year 1582 it was increased to 20,000; in 1632 to 50,113; in 1741 to 110,000, and in 1798 to 114,000. The loss during the siege while the French were in possession, in the two years prior to 1800, amounted to about 25,000, but in 1807 the grand total had risen to a population of 122,804.

The emigration of Maltese to other less populated and more promising countries, so desirable in many ways, but particularly desirable to relieve the congestion of population in Malta, does not take place in sufficient numbers to mark any decrease in these overcrowded islands, and yet there are upwards of 35,000 Maltese and their offspring—British subjects entitled to British protection—residing in other coun-

tries bordering on the Mediterranean. In Sicily there are 700; in Gibraltar, 800; on the Bosphorus, 2,000; in Smyrna, 600; on the sea-coast of Egypt and in Cairo, 2,800; in Tripoli, 1,600; Tunis, 10,000; Algiers, 14,000; Greece, 1,700. I believe the number of Maltese in Egypt as above stated to be largely understated; that 7,000 would be below the actual figures. To avoid paying registration and consular fees the Maltese do not record their arrivals, in a great many instances, in foreign countries. Even when the Maltese do emigrate, either to escape poverty at home or to better their condition abroad, they do not get very far from Malta. It has been a matter of grave concern to the British colonial government for a considerable time past as to how to provide for the surplus laboring population, an evil which every year now becomes more serious. Prolific and fertile as are the cultivable parts of the islands, their total product, forced to its highest yield, would not suffice to support one-third of the population. Knowing this, still the poor Maltese does not take kindly to emigration. Patriotic and filial ties keep him here, and marital ties not only bind him closer, but add human links to his chain. He is more than ordinarily attached to his country, and his affection for it is unquestionably sincere and absorbing. "Flor del Monde" (Flower of the World) is the loving and poetic title he gives Malta. He could not emigrate to colder climes and be content, even if he could live. In Malta, summer and winter, he needs no fire and but little clothing. He is, moreover, eminently dependent on others, having but little education. The priest is his father and friend in (very often) the best sense, and the charitable piety of his countrymen at home will not permit him to suffer from hunger or sickness without affording relief. Only emigration can relieve the plethora of overpopulation. The local and Imperial Governments see this, but are powerless to remedy the conditions against the inclinations of those most interested.

The wages earned by the Maltese workingman proves that it costs him but little to maintain himself here. The rate of wages in Malta may be thus stated: Ordinary laborers are paid 1*s.* 3*d.* (30 cents) per day; journeymen tradesmen, 1*s.* 10*d.* (44 cents) per day; master tradesmen (men competent to undertake the erection of a house), 4*s.* 3*d.* (say $1) per day, each man to feed and lodge himself. The Eastern Telegraph Company hire Maltese laborers to do the heavy work of shoring, tanking and untanking, and shipping deep-sea cables, at 2*s.* (48 cents) per day of twelve hours. If night-work, the pay is increased to 2*s.* 6*d.* per twelve hours.

The principal industry of the islands is agriculture, the chief crops being cotton, wheat, oranges, and market vegetables. The potatoes raised in Malta are favorably famed throughout the Mediterranean and England.

There are absolutely no taxes levied on the inhabitants, of any kind. They have no insurance rates to pay, because their buildings are fireproof. There is no fire department in Malta, and no need of one. The islands have no debt, and therefore have no interest to pay; and better still than simply being out of debt, the local government has a goodly sum (say £250,000) invested in English funds. Every revenue department pays a surplus every year into the local treasury, after paying all running expenses. Honesty and economy distinguish the administration of this model little government. Its port and customs departments present few restrictions to commerce, and the facility with which merchant steamers can be coaled, and, when desirable, provisioned, makes it a favorite calling-port for ship-masters. In 1882 there were 6,675 ves-

sels arrived in the harbor, and within the same period 582,975 gross tons of English coal were landed here.

The only articles of commerce imported into the islands subject to duty are:

		s. d.
Beer	per bbl..	3 0
Cattle	per head..	10 0
Horses and mules	do....	20 0
Wheat	per 8 bushels..	10 0
Corn	per 8 bushels..	6 0
Barley	per 8 bushels..	4 0
Inferior grains	per 8 bushels..	5 0
Manufactured grain	per 175 pounds..	6 0
Olive oil	per 4½ gallons..	0 6
Potatoes	per 175 pounds..	1 0
Spirits	per barrel..	24 0
Wines	per barrel..	12 0
Poorer wines	per barrel..	2 6

From a statement of the custom-house receipts in Malta I note that in 1883 £133,415 were received, the articles paying the largest import duties being:

Wheat	£53,948
Spirits	14,400
Wine:	
Inferior	25,416
Superior	800
Animals	6,000
Beer	6,500

And about £14,000 received for tonnage dues. The tonnage dues are 3*d.* per ton for ships discharging; and the port dues for all entries in the harbor are:

	Shillings.
Ships not exceeding 400 tons	20
Ships not exceeding 800 tons	40
Ships exceeding 800 tons	60

Custom-office fees are merely nominal, certificates under official seal being 2*s.* 6*d.* each.

The salary of the collector of customs is £500 per annum, and that of the port superintendent £300 and fees.

His excellency the governor of the islands receives £5,000 per annum (£3,000 being paid by the Imperial and £2,000 by the local government). The chief secretary's pay is £1,000 per annum. The auditor-general and director of contracts receives £500; the receiver-general, £400; the superintendent of public works, £400; the comptroller of charitable institutions, £400; and the public registrar, £290; the superintendent of the government printing-office has a salary of £100; the chief justice is paid £650, and his five associate judges receive each £500 per annum; the Crown advocate's salary is £500; that of the director of education, £500, while the professors in the university are paid from £120 to £300 each per annum; the superintendent of police gets £500, his assistant £300; the chief police physician £300.

The following countries are represented in Malta by consuls or consuls-general: America, Austria, Belgium, Brazil, Denmark, France, Germany, Greece, Italy, Morocco, Netherlands, Persia, Portugal, Roumania, Russia, Spain, Sweden and Norway, Turkey, and Tunis.

There are two local banks, which make no public reports, and an agency of the Anglo-Egyptian Banking Company, in Valletta. There are a chamber of commerce and an exchange in the island, composed of merchants and shippers.

The Church of England has two churches and six chaplains (exclusive of the garrison chapels and chaplains) in the island; the Presbyterian (Scotch) Church one, with a minister, and the Wesleyans have a church and minister.

The real property of the islands is, as near as possible, thus owned: One-third by the Church and priests, one-third by the people, and one-third by the British Government, the latter succeeding to the property formerly owned by the Knights of Malta.

The franchise has lately been extended in the islands, so that now 10,000 inhabitants are entitled or privileged to vote. It is true there is not much to vote for, but it is a small step, in its way, toward popular government. At present only members of council are voted for. At the last election, in 1883, less than 2,500 votes were cast. The council (which ordains and establishes laws—always subject to the approval of the Imperial Government—for the peace, order, and good government of the colony, and votes supplies for the maintenance of the civil establishments) is composed of eighteen members, ten appointed by the British Crown and eight elected by the people. A late dispatch from the home Government in London, however, directs that one of the appointed members shall withdraw, and the president (the governor) to give his casting vote on very rare occasions. This leaves the official and elected members evenly balanced. The qualifications of electors, besides being natural-born or naturalized subjects, are, the age of twenty-one years and upwards, the possession of an annual income of $30 from real property, or the payment of a rent of $30 a year. A general election is held every five years. The dissolving of a council, however, for any reason, entails a new election, the time to be named by the governor, acting under orders from the Crown. At present (March, 1884) there is no council, owing to the resignation of all but one of the elected members, the resignation arising from a dispute on the "language question." This question has assumed rather serious proportions, and agitates the two opposing parties more or less stirringly. I think it is within bounds to speak of the two parties as "English" and "anti-English." The next election, which, it is expected, will be ordered to take place within a few months, is looked forward to by both sides with great interest.

There is a government printing office in Valletta, which publishes at unequal intervals a small "Government Gazette." This office is also the "custodian of stationery," and the conducting of the establishment costs upwards of £2,000 per annum.

There is also a public library in Valletta—to which a small museum is attached—containing more than 60,000 volumes, free to the public. The collections of books of some of the Knights of St. John have been donated to and preserved in this library. The museum contains a small but exceedingly interesting and valuable collection of antiquities found in Malta. The Imperial Government, in connection with the local government, is, I understand, about to institute a more systematic development of the long-buried remains of ancient Malta and Gozo than has been attempted before. A diligent and skillful search through and uncovering of the upper soil and rubbish would detect and bring to light numerous antiquities, and make out a little Tyre or Sidon of the insular rock on which one of the earliest Phœnician colonies settled. "And a survey of subterranean Melita" [Malta], says Dr. A. A. Caruana, the most learned and patient of Maltese scholars, "besides of great interest in an archæological point of view, would confirm the claim of these

islands upon the primitive establishment and venerable antiquity of Christendom."

The geographical importance of Malta, though but a fly-speck on the map of the world, has always been recognized. So early as B. C. 1519 its capacious harbors were utilized by Phœnician traders, and from B. C. 480 to B. C. 216 the Carthagenians held them as naval stations. Stationed in the great highway of maritime commerce between the East and the West, Malta's value to Great Britain, and, indeed, to nearly all commercial nations, cannot be reckoned by figures. As a convenient depot for ships in years of peace, as a mighty fortress in times of war, Malta will continue to be, as it is now and as it has been for more than three thousand years, one of the most useful and desirable points in the Mediterranean.

JOHN WORTHINGTON,
Consul.

UNITED STATES CONSULATE,
Malta, March 15, 1884.

VIENNA STREET RAILWAYS.

REPORT BY CONSUL-GENERAL WEAVER.

From the report of the Vienna Tramway Company for 1883, just published, I collate the following items, compared with the year 1882, which may be of sufficient interest to warrant transmission, viz:

Items.	1883.	1882.	Difference.
Length of line.....kilometers..	54.9	48.3	+ 6.6
Length of track.....do....	108.5	95.8	+ 12.7
Number of cars	577	560	+ 17
Number of horses	2,093	1,821	+ 272
Total tickets sold	29,850,000	26,920,000	+ 2,930,000
Coupon tickets sold	11,070,000	9,930,000	+ 1,140,000
Total annual tickets sold	294	219	+ 75
Receipts from tickets.....florins..	3,140,000	2,830,000	+ 510,000
Total receipts.....do....	3,270,000	2,950,000	+ 320,000
Total expenditures.....do....	2,360,000	2,140,000	+ 220,000
Net balance of gain.....do....	910,000	810,000	+ 100,000
Dividend declared	8.82 per cent.	8.23 per cent.	+ 0.49 per ct.
Capital stock.....florins..	7,720,000	7,770,000	− 50,000
Distance traveled.....kilometers..	8,980,000	8,030,000	+ 950,000

The Vienna Tramway Company holds a concession until December 25, 1925, of all the tramway traffic of this city within the lines, and for certain lines outside the city limits, amounting to 12.6 kilometers. The capital stock at the close of 1883 was 7,724,120 florins, divided into shares and half shares of 170 florins per share.

There exists also a New Vienna Tramway Company, which holds a concession for certain additional tramways without the lines of the city proper, amounting to 10.6 kilometers, with a capital stock of 1,815,000 florins, on which dividends of 2, 3, and 2 per cent. were paid for the years 1880–'82, respectively. It will be seen, therefore, that the city tramways were much more prosperous than those of the suburbs. The large increase of the Vienna company in 1883 was mainly owing to the unusual traffic resulting from the Electric exhibition, held last fall in the Prater, to which the tramways carried the major part of the visitors.

In general the tramway service of Vienna is very good, consisting of

large, capacious cars, fairly clean, moving at a relatively rapid rate, and stopping only at the halting posts erected along the track at distances of from 15 to 20 rods apart. The fare is also relatively cheap, each ticket purchased of a conductor costing 12 kreuzers, or ten coupons for a florin, which entitles the holder to a ride with one exchange for any distance within the city limits, and to one exchange in the same general direction. Thus a person by purchasing the coupon ticket may ride probably 3 miles for a cost of 4 cents. The coupons are not sold by the conductors, but only at the offices of the company and by the "starters" at each junction of the tramways, where transfers from one car to another alone can be made. The conductors collect fares and issue tickets so numbered that they may be carefully controlled by the controllers of the line, who may enter at any point on the line to examine the conductors' books and the passengers' tickets. The large increase of the net income of the company in 1883 has given occasion on the part of the competent authorities to demand a reduction of the price of the tickets to 10 kreuzers each, equivalent to about 4 cents of our currency, which as yet is resisted by the company, and the question has been referred to the courts for final adjudication.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, March 27, 1884.

TEA ADULTERATION IN JAPAN.

REPORT BY MINISTER BINGHAM, OF TOKEI.

I have the honor to inclose a translated copy of notification No. 4 of the Imperial Government of Japan, as published in the Japan Weekly Mail, 8th ultimo, together with a copy of the by-laws therein mentioned, and conformity to which, you will please note, is expressly enjoined by the Government upon all persons engaged in the tea trade, who are also required to report the establishment of tea guilds to the agricultural and commercial department.

It is to be hoped that Article III of the by-laws may put an end to the adulteration of teas in Japan, which has of late been the subject of complaint both here and in the United States.

JNO. A. BINGHAM,
Minister.

UNITED STATES LEGATION,
Tokei, Japan, April 7, 1884.

Notification No. 4 *of the Imperial Government.*

TO CITIES AND PREFECTURES:

Whereas there is a quantity of colored, impure, and otherwise adulterated tea in the market, not only interfering with legitimate trade, but injurious to the public health, those engaged in the tea trade are ordered to conform with the following by-laws, and to report the establishment of tea guilds to the agricultural and commercial department.

BY-LAWS CONCERNING TEA GUILDS.

ARTICLE I.—Those engaged in the tea trade, be they producers or sellers, must establish tea guilds in each of the urban or rural wards in which they reside.

N. B.—The production of tea for individual consumption does not come under these by-laws.

ART. II. The guilds shall bear the name of the prefecture, city, urban, or rural ward in which they are established.

ART. III. The guilds shall frame rules with a view to achieving the following objects: (1) That tea adulterated with bad and impure stuff shall not be manufactured; (2) that tea-leaves shall be properly fired and packed; (3) that the names of the producers and, or sellers shall be marked on every package.

ART. IV. Every guild shall appoint a committee to regulate and manage its own affairs.

ART. V. The members of a guild must be furnished with certificates proving their membership. These certificates must bear the stamp of the local authorities.

ART. VI. A committee shall examine into and report upon the condition of all the guilds.

ART. VII. A head guild for the supervision and control of all other guilds shall be established in each prefecture.

ART. VIII. The officers of the head guild shall be elected by vote from among the members of the subordinate guilds.

ART. IX. The expenses consequent upon the maintenance of the head and sub guilds shall be mutually determined by all the guilds.

ART. X. Each guild shall be at liberty to frame such rules as may be considered expedient for the attainment of the above objects.

YAMAGATA ARITOMO,
Home Minister.

SAIGO YORIMICHI,
Minister for Agriculture and Commerce.

MARCH 3, 1884.

VITAL STATISTICS OF VIENNA.

REPORT BY CONSUL-GENERAL WEAVER.

The report of the statistical bureau of the city of Vienna, giving the vital statistics of the city for 1883, compared with 1882, has recently been published, from which I compile the following tables for transmission, as containing much matter of interest and importance.

The following table gives the marriages and the births, in number and percentage, of Vienna within the lines during 1883 and 1882:

Description.	1883.		1882.	
	Number.	Per cent.	Number.	Per cent.
Marriages	6,062	.....	6,526	.....
Living births:				
Legitimate males	8,075	29.2	8,164	29.3
Legitimate females	7,868	28.5	7,647	27.5
Illegitimate males	6,043	21.8	6,114	21.9
Illegitimate females	5,670	20.5	5,932	21.3
Total living births	27,656	100.0	27,857	100.0
Illegitimate living births	11,713	42.3	12,046	43.2
Still-births:				
Legitimate males	439	31.7	446	32.0
Legitimate females	329	23.7	342	24.6
Illegitimate males	365	26.3	361	25.9
Illegitimate females	253	18.3	243	17.5
Total still-births	1,386	100.0	1,392	100.0
Illegitimate still-births	618	44.6	603	43.4
Total births:				
Males	14,922	51.4	15,085	51.6
Females	14,120	48.6	14,164	48.4
Total of all births	29,042	100.0	29,249	100.0
Total illegitimate births	12,331	42.5	12,649	43.2

The population of Vienna residing within the limits of the city lines proper, including 20,000 active military, was officially estimated at 749,762 inhabitants for the middle of 1883, upon which the foregoing statistical table has been compiled; this gives, therefore, for 1883, a total birth-rate of 38.7 per thousand, or a living birth-rate of 36.9 per thousand.

The number of illegitimate births is worthy of remark, being not less than 42.5 per cent. for 1883, and 43.2 per cent. for 1882, largely owing, doubtless, to the difficulty of contracting legal marriages in this country, and the consequent absence of any reproving public opinion against the immorality.

It should also be noted that of the still-births in 1883 and 1882 not less than 58 per cent. and 57.9 per cent. respectively were males, leaving only about 42 per cent. for the females, or 16 per cent. less than the males.

This large excess of the still-births of the males during the last two years awakes the inquiry whether it be only a coincidence or whether some scientific explanation may be given for the singular fact.

The following table gives the number, causes, and percentage of the deaths occurring in the city of Vienna proper during the years 1883 and 1882:

Description.	1883.		1882.	
	Number.	Per cent.	Number.	Per cent.
Deaths:				
Excluding still-born males	11,253	53.10	11,491	53.21
Excluding still-born females	9,941	46.90	10,104	46.79
Total deaths, excluding still-born	21,194	100.00	21,595	100.00
Of which belonging to suburbs	2,951	13.92	2,833	13.30
Total deaths in city proper	18,243	86.08	18,722	86.70
Under one year of age	5,329	25.14	5,620	26.02
Between one and five	2,601	12.27	3,283	15.20
Between five and ten	513	2.42	673	3.12
Between ten and fifteen	254	1.20	290	1.34
Between fifteen and twenty	768	3.62	679	3.14
Between twenty and thirty	2,249	10.61	2,108	9.76
Between thirty and forty	2,143	10.11	2,050	9.49
Between forty and sixty	3,460	17.18	3,519	16.30
Between sixty and eighty	3,238	15.28	2,951	13.67
Over eighty	451	2.13	414	1.92
Unknown	8	0.04	8	0.04
CAUSES PRODUCING DEATH.				
Smallpox	73	0.34	808	3.74
Measles	46	1.16	203	0.94
Scarlet fever	150	0.71	410	1.90
Diphtheria	201	0.95	332	1.54
Whooping cough	218	1.03	167	0.77
Typhoid fever	144	0.68	154	0.71
Typhus fever	13	0.06	33	0.15
Erysipelas	60	0.28	92	0.43
Dysentery	26	0.12	13	0.06
Cholera nostras	4	0.02	1	0.04
Intermittent fever	5	0.02	1	0.04
Syphilis	50	0.24	51	0.24
Puerperal fever	86	0.41	63	0.29
Other miasmatic diseases	2	0.01	.....	.....
Total contagious and miasmatic diseases	1,278	6.03	1,828	10.78
Apoplexy	456	2.15	426	1.97
Croup	159	0.75	190	0.88
Bronchitis	665	3.14	638	2.95
Inflammation of lungs	2,041	9.63	2,094	9.70
Heart diseases	800	3.78	772	3.57
Inflammation of stomach and bowels	1,535	7.24	1,395	6.4

Description.	1883.		1882.	
	Number.	Per cent.	Number.	Per cent.
Diarrhœa	25	0.11	32	0.15
Consumption	5,451	25.72	5,094	23.59
All other diseases	8,360	39.45	8,197	37.96
Total deaths from disease	20,770	98.00	21,066	98.01
Accidents	189	0.89	181	0.84
Suicides:				
By poison	49	0.23	54	0.25
By hanging	59	0.28	63	0.29
By drowning	13	0.06	8	0.04
By shooting	64	0.30	69	0.32
By other means	35	0.17	30	0.14
Total suicides	220	1.04	224	1.04
Murders	10	0.05	17	0.08
Floating corpses	5	0.02	7	0.03
Total deaths	21,194	100.00	21,595	100.00
Total living births	27,656	100.00	27,857	100.00

The foregoing table shows a total death rate, when estimated on the population of the city within the lines (749,762, including 20,000 military), equal to 28.27 per thousand in 1883 against that of 29.16 in 1882, while if the deaths from the suburbs be omitted the strict death rate of the city is reduced to 24.33 in 1883 against 25.28 in 1882 per thousand inhabitants. It will be noted that consumption (tuberculosis) alone causes annually about 25 per cent. of the total deaths; that, on the contrary, typhoid and typhus fevers are rare, amounting during the last year to less than *three-fourths of one per cent.* of the whole, a fact, no doubt, attributable to the fine system of sewerage and the purity of the water of Vienna, producing a sanitary condition which compares very favorably with the other capitals of Europe, particularly Paris and London.

The excess of births over deaths in the city proper in 1883 was 10,799 against 10,527 in 1882, being for 1883 12.6 per cent. per thousand of the population, or an absolute birth increase of 1.44 per cent.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, March 29, 1884.

CITY OF CHAUTABUN, SIAM.

REPORT BY CONSUL-GENERAL HALDERMAN, OF BANGKOK.

After a fortnight's absence I have returned from Chautabun, an important Siamese port on the eastern shore of the Gulf of Siam, about 170 miles to the east of Bangkok, whither I had gone to make survey of the trade prospects.

The town has a sheltered harbor for junks and light-draught vessels only, and an estimated population of 30,000 Chinese, Annamees, and Siamese. It sells annually for foreign consumption about 25,000 piculs of pepper (1 picul = 133⅓ pounds.)

Precious stones, cardamoms, and ivory in small quantities are also exported. On the hill-sides near by coffee is produced. In the alluvial plains, 20 miles out, stretching as many more toward Batamboug, and in a northeasterly course, sapphires are found. The workers in these deposits are now few in number, and are for the most part experienced Indian and Burmese miners. The gems are said to be not inferior in beauty, brilliancy, and value to the sapphires of Ceylon.

I found a Roman Catholic mission, claiming 2,000 converts.

French influences are seeking to establish a line of steamships from Bangkok via Chautabun to Saigon, the capital of French Cochin China, and give assurance of ultimate success.

The special inducements for American trade are not now superior to what may be had at other Asiatic seaports possessing better harbors and safer anchorage.

Population along the coast and on the adjacent islands is sparse.

This territory, lying contiguous to Cochin China, and the protected state of Cambodia, will, perhaps, at no remote day receive attention.

In my journey I was accompanied by Count de Kergarade, the French commissaire and consul.

JOHN A. HALDERMAN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Bangkok, January 8, 1884.

POPULATION AND SANITARY CONDITION OF MADEIRA.

REPORT BY CONSUL DU PONT SYLE.

Madeira having long been celebrated for the mildness and salubrity of its climate, I beg to call the earnest attention of the medical profession in the United States to the subjoined remarks upon its population and sanitary condition. The information contained herein, together with the annexed table, has been furnished at my request by Dr. Julius Goldschmidt, for many years a successful resident physician

The statistics herewith are compiled from the deaths among the Portuguese population, amongst whom, for the most part, cleanliness and good drainage are unknown. Amongst foreigners, living under proper sanitary condition, the mortality would be much lower.

DR. GOLDSCHMIDT'S REPORT FOR THE YEAR 1881.

The mortality of the town of Funchal (population 21,000, census of 1878) during the year 1881 was 504, or 24 to 1,000 inhabitants; of the *concelho* of Funchal, *i. e.*, town and suburbs (population 38,650), 840, or 21.73 to 1,000 inhabitants, and of the suburbs alone (17,650 population), 336, or 19.9 to 1,000 inhabitants. The most remarkable feature of this year is the entire absence of a whole series of zymotic diseases—at all times rare in the island—especially of measles, scarlet fever, small-pox, whooping-cough, &c. Typhoid fever represents in the town only 2 per cent., and in the suburbs scarcely 1 per cent. of the totality of cases; erysipelas, 0.4 and 0.6 per cent. in town and suburbs; diphtheria has somewhat increased against last year, 4.75. per cent for the town, and 15.75 per cent. for the suburbs. The greater intensity of this disease in the less densely populated country districts may be accounted for by the very primitive and unhealthy state of the peasant dwellings—a square hole surrounded by four low stone walls, and covered by a high straw roof; a small low door as only means of communication and ventilation, where often no less than three or four generations are

promiscuously huddled together. This same cause accounts for the greater mortality amongst children; diarrhœa, dysentery, and enteritis foot up 33 per cent. in the suburban districts against 19 per cent. in town. Pneumonia and pleurisy have greatly subsided since the foregoing year. Phthisis pulmonum and congestio and apoplexia pulmonic show a slight increase—15.35 per cent. against 14 per cent. in 1880. Phthisis spreads mostly amongst the unpopulated town districts, and gradually diminishes with the elevation above the sea. The parishes of the Monte, in an altitude of between 800 and 3,000 feet, shows only two cases of chronic and none of acute lung disease. São Roque returns only two cases of phthisis and one of apoplexy of the lungs and one of pneumonia; the parish church lies 1,129 feet above the sea.

Kidney diseases are not mentioned amongst the fatal cases this year, but must be identified with those under the heading of "anasarca and scites," and not improbably to a great extent amongst those described as anæmia. However, the number of such cases is, as in former years, very small—a fact which deserves a special notice.

The population of Madeira, notwithstanding its present density (430 inhabitants to the square mile) and the fact that only one-sixth of the surface of the island is under cultivation (on account of the want of water in the mountain districts), is rapidly increasing, unchecked by epidemics or considerable emigration. The one endemic disease, leprosy, is slightly on the increase, especially in the parishes of the west coast. The number of inmates, however, in the Funchal leprosy hospital during 1881 varied between only five and eleven. Emigration has been directed to Demerara, Brazil, and lately in increasing numbers to the Sandwich Islands. The attention of the United States Government ought to be turned towards the many good qualities of the Madeira emigrants—their sober, frugal habits, their endurance of and special aptitude for a subtropical and tropical climate, and their thorough knowledge of all agricultural work, especially the cultivation of the sugar-cane. A Madeira colony of over 10,000 in Demerara is very much appreciated there, either for the out-turn of the soil or in the petty handicrafts of town and country. The same efforts which lately have proved successful in directing emigration to the Sandwich Islands might effectually be tried to secure a large part of the ever-increasing surplus population of the island for the Southern States of the Union. The Madeira population amounted in 1768 to 63,912 inhabitants; in 1813 to 90,910 (annual increase 0.94 per cent.); in 1823 to 98,000 (annual increase 0.78 per cent.); in 1835 to 113,446 (annual increase 1.30 per cent.); in 1849 to 110,084 (annual decrease 0.12 per cent.; famine emigration in 1846, 4,945, in 1847, 4,720); in 1855 to 112,300 (annual increase 0.33 per cent.); in 1859 to 104,000 (annual decrease 1.90 per cent., cholera epidemic and famine); in 1870 to 125,000 (annual increase 1.70 per cent.); in 1878 to 130,470 (annual increase 0.55 per cent.).

Table giving the deaths in the island of Madeira for the year 1881, *together with the affecting diseases.*

Diseases.	Town parishes.					Suburban parishes.						Aggregate.
	Sé.	Sta. Maria maior.	S. Pedro.	Sta. Luzia.	Total.	St. Antonio.	S. Martinho.	São Roque.	S. Gonsalé.	Monte.	Total.	
Apoplexia cerebralis	4	4	12	5	25	1	3	.....	.....	1	5	30
Congestio cerebralis	4	4	3	1	12	8	4	3	.....	2	17	29
Encephalitis chronica	1	4	6	1	12	4	.....	.....	.....	3	7	19
Meningitis	5	8	1	2	16	8	.....	1	.....	2	11	27
Commotio cerebri	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1
Tetanus	1	.....	.....	.....	1	1	.....	.....	.....	.....	1	2
Hydrocephalus	1	.....	.....	1	2	.....	.....	.....	.....	.....	.....	2
Convulsio	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	1
Epilepsia	.....	1	4	.....	5	1	.....	.....	.....	.....	1	6
Bronchitis	7	1	8	3	19	2	1	5	1	2	11	30
Pneumonia et pleuritis	8	6	4	3	21	3	3	1	1	.....	8	29
Phthisis pulmonum	33	12	25	9	79	13	11	2	1	2	29	108
Congestio pulmonum	2	1	7	3	13	3	.....	.....	.....	.....	3	16
Apoplexia pulmonum	.....	.....	.....	.....	.....	1	.....	1	3	.....	5	5
Angina	2	.....	.....	.....	2	1	1	.....	1	4	7	9
Croup	1	13	6	.....	20	3	1	2	3	.....	9	29
Diphtheria	5	9	6	4	24	22	19	2	7	3	53	77
Vitium cordis	8	5	5	3	21	1	1	1	.....	3	6	27
Carcinoma ventriculi	.....	2	.....	.....	2	.....	.....	.....	.....	.....	.....	2
Icterus gravis	1	.....	.....	.....	1	.....	.....	1	.....	.....	1	2
Hepatitis	3	.....	.....	.....	3	1	.....	.....	.....	.....	1	4

giving the deaths in the island of Madeira for the year 1881, *&c.*—Continued.

iseases.	Town parishes.					Suburban parishes.						Aggregate.
	Sé.	Sta. Maria maior.	S. Pedro.	Sta. Luzia.	Total.	St. Antonio.	S. Martinho.	Sto Roque.	S. Gonsalo.	Monte.	Total.	
iepatis								1			1	1
hepatis	2		2		4					1	1	5
	8	7	8	4	24	1	3	5	3	2	14	41
	12	4	3	3	22	2	2	5	6	1	16	38
	7	14	13	13	47	29	20	16	1	14	80	127
	1				1							1
acuta	2	2			4	1	1				2	6
dominalis		5	3	2	10	1			1	1	3	13
and ascites	3				3							3
		1		1	2	1				1	2	4
	10	5	3	3	21	1	1	1	1		4	25
			1		1	1			1		2	3
is	1		2		3	1					1	4
		2	2		4							4
	4			4	8	2	2		1		5	13
aligna	1				1							1
			1		1							1
			2		2					1	1	3
	1		4	2	7	1	1				2	9
senilis	9	3	10	2	24	1			1	2	4	28
		3		4	7	3	2		2	3	10	17
	4		1		5			1	1	1	3	8
arcerata	1				1							1
aus		1			1				1		1	2
nuscularis			2		2							2
		1	1		2	2	1		1	1	5	7
iversa	3	2			5							5
	3				3	1					1	4
			1		1	2		1			3	4
		2	2	1	5							5
l	157	123	148	74	504	123	77	49	37	50	336	840

L. DU PONT SYLE,
Consul.

ED STATES CONSULATE,
Funchal, Madeira, 1883.

TRADE OF YUNNAN.

REPORT BY CONSUL-GENERAL HALDERMAN, OF BANGKOK.

uch has been said and written about trade with the interior of
by way of the Songkoi, China's back door, as it has been called,
ppropriately, I avail myself of this opportunity to transmit, for
rmation of the Department, a copy of a "Report on the trade of
by the Red River (Songkoi) route," prepared by Count de Ker-
, French commissaire at Bangkok, while consul at Hanoi Tong-
the year 1880.
writer assured me that the conditions remain unchanged, and
report is an entirely authentic and trustworthy view of the
n in the present year.
ll be observed that the prospective value of the trade does not
him as being of such magnificent proportions as it has other

writers and travelers, and his position, past and present, may be presumed to lend weight to his views.

The report has been mentioned with favor in the French Chamber of Deputies.

JOHN A. HALDERMAN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Bangkok, February 9, 1884.

TRADE WITH THE INTERIOR OF CHINA.

BY COUNT DE KERGARADEC.

The treaties of 1874, concluded between France and Annam, had for their chief object the opening up of the Red River, thus affording European trade ready access to the interior of China and a relatively easy outlet for the products of a region which all travelers agree in representing as exceedingly rich in metals. The probable utility of this opening appears up to the present to have given rise to many and various expectations, but all of them wide of the mark. We know as a fact that the numerous mines of Yunnan yield in abundance copper, tin, zinc, and lead, that gold, silver, and cinnabar are worked, and that the province also exports tea, opium, and medicinal plants. Up to the present, however, there has been wanting positive information as to the disposable quantity of these various products and the importance of the commercial movement to which their exportation might give rise. We have sought to collect here some information, and especially some figures, which may serve to give a more exact idea, as well of the trade at present carried on by the Red River, as of the development of which it is susceptible in the future. Only a few years have elapsed since the publication of his voyage by M. Garnier, and a little later the enterprise of M. Dupuis attracted the attention of Europeans to this route. It has, however, for centuries been used by Chinese and Annamese merchants. From time immemoral it is by the Tonquin River that the greater part of the salt and spices consumed in the heart of the province have reached Yunnan. After the general reorganization of the mines 160 years ago by the celebrated Emperor Kang-hi the production of metals assumed considerable importance, by which the trade of the river was affected. It was at this time that some colonies of Cantonese founded on the frontiers of Annam and China, at Lao Kai and Mang Hao, establishments which still serve as entrepôts for the trade of the country. Besides salt and cotton from Tonquin, Yunnan received from Canton cloths, tobacco, paper, and other merchandise, sending in exchange its metals, tin, lead, zinc, silver, and copper. The trade was subjected to no prohibition and it attained much larger proportions than it possesses in our time. Since then the restrictions imposed on the sale of copper, which constitutes three-fifths of the metallic outturn of the province, political events, and the wars which troubled sometimes China and sometimes Tonquin have successfully reduced it, and at present it is said to be not more than half what it was at the commencement of the century, but the character of the trade is the same now as it has been for the last hundred years. Then as now the Chinese moved freely in Annam, but the Annamese junks could not, without special permission, leave the limits of the empire. Their cargoes were, therefore, transshipped at the frontier to Chinese boats, carried by water to Mong-hao, where the navigation of the river ends, and from there distributed through the interior of the country either by mules or porters. Goods were not sold for money but exchanged directly for other goods.

This system of barter is still the only one in force. In its course it follows settled usages, which are never departed from. For example, salt is exchanged for tea, opium, and drugs; it serves also as money in small transactions, and it is with salt that provisions are purchased up the river. Tin is reserved as payment for more valuable goods, such as clothes, Fohkienese tobacco, &c. Ventures are made at Hanoi by some Chinese houses who have agents at the frontier and are in correspondence with the Yunnan merchants. The following table shows of what goods the trade principally consisted in the year 1879. The values are expressed in francs and fixed, both for imports and exports, by the market price at Hanoi. Exports from Hanoi to Yunnan:—Salt, 120,000 francs (3,000,000 kilograms; Tonquin salt); tobacco, 680,000 (prepared tobacco from Canton and Fohkien); raw cotton, 200,000 (from South Tonquin); cotton goods, 50,000 (English manufactures); cotton yarn, 24,000 (English manufactures); light woolen cloths, 16,000 (German); peddlers' ware, 15,000 (chiefly gilt buttons from England); matches, 5,000 (Swedish); pepper, 12,000 (from Singapore, via Hong Kong);

ine paper, 15,000 (printing paper of Canton manufacture); dried fish, 8,000 (Tonquin); dried fruits, 12,000 (prepared at Canton and including dried litchis); Chinese medicine, 8,000 (from Canton prepared); sundry merchandise, 5,000 (cinnamon, sandal wood, porcelain, lamps, &c.); total, 1,170,000 francs. Of this amount European goods account for about 110,000 francs. These are common English cottons—gray shirtings, T cloths, drills—red camlets, red or blue light cloths, and gilt buttons, which the people of Yunnan use on their clothes. The goods imported to Hanoi from Yunnan during 1879 were as follows:

Tin, 1,700,000 francs (some thousand kilograms are consumed in Tonquin, the remainder sent to Hong Kong); lead, 5,000 (consumed in Tonquin); tea, 60,000 (almost entirely consumed in Tonquin); opium, 240,000 (consumed in Tonquin); drugs, 20,000 (exported to Canton); false gambier, 30,000 (this false gambier or cu-nao counts for more than 200,000 francs in the export trade of Tonquin; it is gathered generally on Annamese territory, but some is brought from forests on Chinese territory between Lao-kai and Kwanghao); total, 2,055,000 francs. From these figures it will be seen that the value of the goods brought from Yunnan to Hanoi exceeded in value, according to the market price on the spot, those sent to Yunnan by 885,000 francs. We know also that the traffic is one of barter and that money is not employed in it. This difference of 885,000 francs represents then, (1) cost of transport, going and returning; (2) the duties paid on the route to the Annamese interior customs; (3) duties levied by the Black Flag band, of which mention will be made hereafter; (4) traders' profits.

About a hundred and twenty junks, averaging 20 tons each and belonging to Annamese at Hanoi, are engaged in the trade between that town and Lao-kai. These boats make at least two voyages annually on account of Chinese charterers, who usually ship a general cargo. Salt, the only heavy article sent to Yunnan, constitutes in weight about four-fifths of the cargo, which is completed by goods of greater value. As barter is the rule followed on the market at Lao-kai, so also is it higher up at Mang-hao. In both cases the cargoes, after having paid the imports of the Black Flag chief, are transshipped to lighter boats, of special construction, belonging to Yunnan merchants. These boats are worked exclusively by Chinese. As already remarked, Annamese cannot go into China; further, the difficulties of the navigation of the Red River, already great before arriving at Lao-kai, sensibly increase after passing the frontier, and the large boats of Hanoi would be too heavy for the rapids constantly met with on approaching Mang-hao. One or two of these rapids can only be crossed by lightening the boats, the cargoes being carried by men to the other side of the obstacle. For this reason the goods are packed in solid bales of uniform weight, usually 36 kilograms. Salt is placed in baskets on leaving the frontier. Arrived at Mang-hao, two of these bales or baskets form a load for a mule. Boats can ascend the river during at least eight months of the year. During the flood, that is, in the months of June, July, and August, and sometimes September, they can easily descend with the stream, but the strength of the current prevents their going up the river. In ordinary times thirty to forty days are occupied in the voyage from Hanoi to Lao-kai and ten or twelve from Lao-kai to Mang-hao. A pirogue with dispatches can make the journey in less than half the time. The rate of freight is at present, in French money, as follows: "Per 60 kilograms of salt, from Hanoi to Lao-kai, 2.60 francs; from Lao-kai to Mang-hao, 3 francs; per bale of merchandise (36 kilograms) from Hanoi to Lao-kai, 2.60 francs; from Lao-kai to Mang-hao, 2 francs. In coming down hardly two days are occupied from Mang-hao to Lao-kai, and five or six from Lao-kai to Hanoi. Freight this way is much lower than the other. A picul of tin pays 1.25 francs to Hanoi. We have said that the carrying trade is ordinarily conducted by Annamese junks to the frontier. Sometimes, however, Chinese from Mang-hao come as far as Hanoi with their boats. In this case they have to pay the same duties as if their cargoes had been transshipped.

Boats going to Yunnan pass three customs stations on the road, the farmers of which have purchased from the provincial authorities the right to levy toll. The first, that of Frang, is only a few hours from Hanoi; the second, Giadu, is a little beyond the village of Hung-hao, and the last, Bao-ha, four or five days before reaching the frontier. According to law each of these stations ought to collect a duty of 2½ per cent. on ordinary merchandise and 10 per cent. on salt. This appears sufficiently high, especially when it is collected three times. The farmers, however, generally claim from the merchants various squeezes in addition, which the latter are obliged to pay in order to avoid the vexations which the customs officer can so easily cause them. Small at the two first ports, these exactions are notably augmented at the last, which is distant from any Annamese authority. When I went to Bao-ha at the end of 1876, I found that duties were collected much in excess of those authorized by the regulations. Salt, in particular, paid 20 per cent. All other goods were augmented in proportion, including even foreign goods which had already paid duty at Haiphong, and which are exempted by treaty from any further duty as far as the frontier of China. Since then, in consequence of the repeated demands of the consulate, the provincial authorities have issued orders that foreign goods are not to be taxed, and these have

been followed in part. Tobacco, for example, which constitutes the greater part of the cargoes in value, now passes free, but other articles, including foreign piece goods, have recently been again subjected to the impost. This illegal exaction has formed the subject of another remonstrance. Thus, then, goods for Yunnan, with the exception of foreign goods, ought ordinarily to pay to the three Annamese customs stations between Hanoi and the frontier a total of 7½ per cent., and salt 30 per cent. In point of fact the latter pays at least 50 per cent. in consequence of the illegal exactions of the farmers.

Still more irregular and much higher are the charges levied by the Black Flags. These Chinese, as is known, form part of a band which came from China some fifteen or twenty years ago in consequence of the great rebellion. After having ravaged the provinces to the North of Tonquin the band divided. Part under the name of the Yellow Flag tried to found an independent principality at the head of the river Claire. The others, under the command of an able chief, named Luu-vinh-phuoc, took up their position at Lao-kai. This is the band called the Black Flag, which offers its services to the Annamese Government. Since then Luu-vinh-phuoc has become a devoted vassal of the Court of Hué, which, on its part, leaves him master of the frontier. The Black Flag band is relatively well armed, thanks to the purchases which the result of the douane at Lao-kai permits it to make from Hong-Kong. In times of peace the number of men composing it is not more than from from six to eight hundred, but this number could be rapidly augmented by the enrollment of the frontier Chinese. The duties which Luu-vinh-phuoc collects at Lao-kai, with the tacit assent of the Annamese Government, vary according to his own good pleasure. It is hardly necessary to say that they are exorbitant, the chief being restrained only by the consideration that in putting an end to all profit on the trade he would be cutting off the source of his revenue. Everything which passes his fort must pay the impost, which is sometimes levied in kind, according to ancient usage, and sometimes is declared payable in silver. During the last years it has been taken in kind, and represents an average of a third of the packages. At the present moment payment is made in silver ingots according to the following tariff: Salt, per 60 kilograms, about 4 (half an ounce of silver), paper, per 60 kilograms, about 4; cotton, cloths, tobacco, per bale or case of 30 or 36 kilograms, 8. Tin coming down pays 150 francs per 60 kilograms. The duties paid, the traders still remain under the fear that their boats may be requisitioned according to the necessities of the band or the convenience of the chief.

It is evident that the blackmail levied at Lao-kai, coming above the cost of transport and the duty collected at the Annamese stations, must very sensibly reduce the profit of the trade. It is, however, still considerable, and unless this were so, the risks run being great, the trade would soon entirely cease. To give an idea of what it may amount to, we give the account of an operation in tobacco exchanged at Manghao against tin: 1,000 cases of fine Fohkien tobacco, at 50 francs per case, 50,000 francs; transport from Hanoi to Lao-kai, at 2.60 francs per case, 2,600 francs; Annamese customs duties (now suppressed) per memo.; duties at Lao-kai, at 8 francs per case, 8,000 francs; transport from Lao-kai to Mang-hao, at 2 francs per case, 2,000; total, 62,600 francs. At Mang-hao a case of tobacco is exchanged for 95 catties, or 57 kilograms of tin. We have, then, in exchange for a thousand cases, 57 kilograms of tin, for which the following payments must be made on return: Duty at Lao-kai, at 1.50 francs per 60 kilograms, 1,425 francs; transport from Manghao to Hanoi, 1.25 francs per 60 kilograms, 1,197 francs. The total outlay is therefore 65,222 francs, of which the Black Flags have taken 9,425 francs. Tin sells at Hanoi at 100 francs per 60 kilograms; 57,000 kilograms would therefore give a return of 95,000 francs, which leaves a net profit of 29,778 francs. The operation occupies three months, four at the outside. From this it will be seen that the profit of the traders is considerable. It is necessary that it should be so, for, without speaking of the risk of pillage, the navigation of the river is very difficult, and it frequently happens that boats are lost or damaged. The very considerable profit which it would be easy to make on salt, which is usually exchanged against opium, tea, &c., is eaten up for the most part by the exorbitant duty of 4 francs per 60 kilograms levied at Lao-kai. Since the Yunnan trade still remains advantageous, notwithstanding the deplorable conditions under which it is conducted, it is clear that if the imposts now taken by the Black Flag cease to be levied at the frontier, the profits would be such that the movement already existing would receive a lively impulse. The existing state of things is so evidently in contravention of the provisions of our treaties with Annam that it cannot continue much longer. As soon as the route is free, cargoes upon cargoes will certainly be sent to Yunnan until the limit of the products the province can give in exchange is reached.

Of what development is the Yunnan trade, which we have above shown at present represents an annual value of three to four million francs, susceptible? In an examination of this kind, nothing is easier than to fall into grave errors. We can, however, attempt to value the available resources of the country as much as the information in our possession permits. The Tableau Général de l'etât des Missions, published

nnually by the Société des Missions étrangères, places the total population of Yun-an at fifteen millions. Larousse's dictionary reduces it to five millions. Lastly, an stimate published a few years ago by a Spanish minister to China, in a very valua-le work, gives the figure at eight millions, which, having regard to the wars which rithin the last twenty years have depopulated the province, it appears to us may e adopted. These eight millions are scattered over a vast territory, of which several listricts are very fertile, but of which a great part is incapable of cultivation. The ultivated lands yield sufficient for the support of the inhabitants and a certain quan-ity of opium and tea in addition, but these two articles cannot give rise to a very mportant exportation, at least so far as the Red River is concerned, because they re not wanted on the Canton market. The opium and tea which at present cross he Tonquin frontier are almost exclusively consumed in Annam. The true and only realth of Yunnan is its metals, of which copper is the most important. A Chinese ork entitled "Treatise on the minerals and mines of Yunnan," written about 1850, nd of which a translation with notes has been published by Francis Garnier, gives s valuable information on this subject. The author estimates the annual outturn f copper at from twelve to thirteen million Chinese pounds, or seven and a half illion kilograms. The province would yield then in copper a value of ten or twelve illion francs at most. This is the principal product. Unfortunately, copper cannot t present support any commercial movement on our side as its export is not free.

The province of Yunnan having to provide the greater part of the empire with the etal for the manufacture of cash the mines are in the hands of the Government, ho supply the funds to work them and reserve to themselves the right of buying the etal at a fixed rate. There remain then, gold, silver, lead and tin. The precious etals appear to exist in various parts, but for different reasons, probably in conse-uence of the want of technical knowledge, it is not found very profitable to work hem. Gold is obtained now in insignificant quantities. Silver gives better results, ut the greater part of the mines formerly worked have been abandoned. On the ther hand, the lead, zinc, and tin mines are actively worked. We are not in posses-ion of information as to the quantities obtained of the two first of these metals, of hich the most important fields are in the north of Yunnan, but we were able in 1877 o visit the tin mines at Ko-kieon. According to M. Garnier there are no others in he province. At that time their annual outturn represented a value of less than hree million francs, and only one half of the quantity passed to Tonquin; the other alf followed the Szechuen route. It is, however, generally admitted that if the Red iver were really free the whole of the tin would be sent by this route. On the other and, the outturn of the mines is now annually increasing and may be expected to ttain the figure of the very prosperous times, five million kilograms. This would ive a value on the spot of six or seven million francs, or ten million on the coast of hina, triple the value of the present trade. To sum up, if it is true the mineral realth of Yunnan is great, it is not less true that in practice copper, which forms its ase, is not sold for export, that the Tonquin route is not favorable for lead and zinc, he districts producing those metals being too far from the Annamese frontier, and hat the tin obtained near the frontier seems to remain the principal, or rather almost he only element of trade by the new route. If the production of this metal be tripled, t will represent a value of ten million francs. Tea, opium, and a few other products uitable for export would add to this sum a few hundred thousand francs. In con-lusion, we are compelled to admit that under the most favorable circumstances, un-er conditions very different from those of to-day, the trade with the Red River could ardly attain a total of twenty million francs. For some years, even after the sup-ression of the douane at Lao-kai, it would hardly exceed the half of that sum. In ny case, however, this movement would so far increase the trade of Tonquin, which n the other hand, we think is susceptible of very great development.

DAIRY EXHIBITION IN MUNICH.

REPORT BY CONSUL HARPER OF MUNICH.

I have the honor to send herewith some circulars relating to a dairy exhibition to be held in Munich during the early part of October, 1884, the international department of which may prove of interest to American inventors.

JOSEPH W. HARPER,
Consul.

UNITED STATES CONSULATE,
Munich, April 4, 1884.

PROGRAMME OF THE GERMAN DAIRY EXHIBITION IN MUNICH, 1884.

Under patronage of His Majesty the King Ludwig II of Bavaria, the central committee of the Agricultural Society in Bavaria, in connection with the Dairy Union, established in Bremen, will arrange a German Dairy Exhibition in Munich in the autumn 1884.

THE OBJECT OF THE EXHIBITION.

§ 1. The object of the exhibition is:

1. To show the present state of dairy operations and produce in Germany.
2. To promote the sale of dairy produce.
3. To contribute to the improvement of dairy operations through the intercourse of men of science as well as of practice, and thereby inducing further efforts and suggestions in the dairy department.

TIME OF EXHIBITION.

§ 2. The Exhibition will be opened on Thursday, October 2, 1884, in the Crystal Palace in Munich, and will close on Sunday, October 12, 1884.

THE CLASSIFICATION OF GOODS EXHIBITED.

§ 3. The Exhibition is to comprise:

DIVISION I.—MILK AND ITS PRODUCTS.

GROUP 1.—Milk, new, conserved, and condensed; milk, skimmed by centrifugal power; sweet and sour cream.
GROUP 2.—Butter:
- A. Fresh butter from sweet or soured cream or from milk.
  - *a.* Salted
  - *b.* Not salted.
- B. "Dauer" butter, preserved butter (I and II quality).
- C. Vorbruch-butter and whey-butter.
- D. Melted down butter.

GROUP 3.—Cheese of all kinds:
- A. Rennet cheese.
- B. Sour-milk cheese.
- C. Whey cheese.

GROUP 4.—Other milk products:
Whey, whey vinegar, whey bread, milk sugar, kumys, &c.

DIVISION II.—MACHINERY, UTENSILS, AND ACCESSORIES FOR DAIRIES.

GROUP 1.—Machines, utensils, various methods for carrying milk which are used in the dairy, from the milking to the consumption of milk and its products.
GROUP 2.—Complete dairies at work.
GROUP 3.—Ice store-rooms, means for producing ice.
GROUP 4.—Accessories (butter coloring, rennet, cheese coloring, salt, &c.).
GROUP 5.—Different specimens of food, exclusive of corn, straw, and hay.

DIVISION III.—SCIENTIFIC OBJECTS FOR THE DAIRY.

GROUP 1.—Scientific instruments and preparations.
GROUP 2.—Models.
GROUP 3.—Designs, plans, descriptions, statistics, dairy bookkeeping, dairy literature, &c.

§ 4. The exhibited goods of Division I are to be of German origin, while those in Division II and III are open for international competition.

To give an opportunity to home producers of becoming acquainted with the most important foreign productions, the Exhibition committee undertake to obtain and exhibit a collection of the most remarkable milk products of foreign countries.

THE TIME FOR PRESENTATION.

§ 5. The notices of the intended sending in of goods for exhibition must be received by August 1 at the latest, and are to be addressed to the Exhibition committee for the German Dairy Exhibition at Munich (Türkenstrasse 7).

FORM OF APPLICATION.

§ 6. For presentation one has to make use of the forms of application to be obtained gratis from the Bureau of the German Dairy Exhibition in Munich (Türkenstrasse Nr. 7).

The same with a duplicate, clearly written and filled in, and, with all the questions answered conscientiously, must be handed in to the committee.

The exhibitor has one copy from the Exhibition committee returned to him testifying the right of entrance, and as legitimation on delivery of the goods to the Exhibition.

DIRECTIONS FOR DELIVERY.

§ 7. The delivery of new milk, all kinds of cream, fresh butter, and cream cheeses can take place daily until 8 o'clock a. m. during the exhibition.

The sending in of preserved and conserved milk, of "Dauer" butter and preserved butter, must take place at least six weeks before the opening of the Exhibition, if a judgment upon these productions is required from the judges.

The remaining products of Division I must be in the exhibiting room, at the latest, by September 27, 1884.

The machines and arrangements which require steam power are to be delivered between September 1 and 15, 1884.

Other goods for exhibition of Divisions II and III, which require no steam power, must be sent in before September 24, 1884.

Goods delayed in delivery have no claim for acceptance in the Exhibtion room, nor to a judgment from the judges.

The packing cases of goods sent in for exhibition must have the same mark as is given to the exhibitor on his certificate (§ 6) from the Exhibition bureau, as well as the address of the Exhibition committee.

A chemical analysis of the specimens of food (Division II, Group 5) is desired in the interest of the exhibitor.

QUANTITY OF GOODS EXHIBITED.

§ 8. With regard to the quantity of goods to be sent in, the following is to be observed:

1. Not less than 2 kilograms of butter can be exhibited. The butter can be sent in either in the original trade packing case or in some other fitting manner.

2. Of cheeses above 12 kilograms one suffices; of cheeses in weight from 2 to 12 kilograms, at least two must be sent in; of cheeses from one-half to 2 kilograms, at least four, and of cheeses under one-half kilogram, at least 12, not restricting the sending in of more.

Cheeses which habitually come to market in an especial trade packing case must be exhibited in the same.

Of the remaining articles for exhibition of Division I, the Exhibition committee reserve the right, with regard to similar products or fabrications of the same exhibitor, to decide how much is to be exhibited.

SPECIAL DIRECTIONS FOR THE PLACING OF GOODS TO BE EXHIBITED.

§ 9. The hiring of stands is not required of the exhibitors. The cost of transport to and from the Exhibition room is to be paid by the exhibitor.

The committee undertake to provide the necessary motor power and the principal transmissions in the exhibition room.

The exhibitor of machines bears the cost of placing them, of joining them to the principal transmission machinery, and of all the necessary means, proportioned amount of force and care, for working the same.

For the remaining articles the Exhibition committee undertake the unpacking and placing them in the Exhibition room, so far as is requested by the exhibitor.

For the arrangements of a dairy in work (Division II, Group 2) special agreements have to be made.

INSURANCE.

§ 10. The fire insurance for the time in which the exhibited articles remain in the Exhibition room is undertaken by the Exhibition committee.

§ 11. For all other injuries the Exhibition committee take no responsibility; the same will, however, accord sufficient care to the articles exhibited, and also provide for the good preservation of goods delivered during the time before the opening of the exhibition (§ 7).

ORDER DURING THE EXHIBITION.

§ 12. All exhibitors and their assistants must strictly follow the orders of the inspecting members of the Exhibition or of those placed in authority by the Exhibition committee.

All complaints are to be addressed to the bureau of the Exhibition.

THE TESTING OF AND JUDGMENT UPON THE ARTICLES FOR EXHIBITION.

§ 13. Each article for exhibition of Division I, with the exception of new milk, skimmilk, cream, and things daily sent in for sale, will be submitted to a technical examination so far as is practicable, and the favorable result of this examination will be publicly made known.

For all products which are judged as "below good" the publishing of the judgment will not take place; in its stead the judgment will be written and sent to the exhibitor if required. The same can also be seen in the bureau during the exhibition.

The deficiencies observed in the articles of Division I will be mentioned in a general way in the report without naming the exhibitor.

A detailed report with special notice of the remarkable nature of exhibited articles of Divisions II and III will be published.

PREMIUMS.

§ 14. A technical judgment takes the place of the usual premiums; nevertheless the exhibition committee reserve the right of presenting prizes of honor, medals and diplomas of honor for especially remarkable products, or for relative efficiency in the dairy department.

CLOSE OF EXHIBITION.

§ 15. The Exhibition will close on the 12th of October, 1884.

Before the close of the Exhibition nothing must be taken away.

§ 16. The removal of goods after the close of the Exhibition must ensue according to the arrangements of the committee. The exhibitor must undertake the packing for retransport.

§ 17. Those goods which are not removed from the Exhibition room by the 15th of October, 1884, and for which no instructions are at hand from the remittor will be disposed of by the Exhibition committee.

The proceeds gained by this means will be sent to the exhibitor after deducting the costs.

§ 18. The Exhibition committee, according to the wish of exhibitors (who do not renounce the same in favor of the Exhibition fund) will arrange a sale by auction of the exhibited goods, after the close of the Exhibition (without being answerable for the amount of proceeds and with deduction of the cost of sale).

TRANSIT AND CUSTOMS DUES.

§ 19. The Exhibition committee will endeavor to obtain the greatest possible reduction in the customs dues for the transport of goods for exhibition, the said concessions to be published at the earliest opportunity.

ENTRANCE CARDS.

§ 20. All exhibitors or the persons assigned as representatives have claim to an entrance card inscribed with their name.

TASTING-ROOM.

§ 21. Arrangements will be made in the Exhibition with the object of giving to visitors an opportunity of tasting the milk products, and by this means to afford also to exhibitors the possibility of making their exhibited goods sufficiently known to consumers.

In using the exhibited products for this purpose the sanction of the exhibitor is required and a special agreement with the Exhibition committee.

MUNICH, *October* 11, 1883.

THE COMMITTEE: Count Lerchenfeld; Otto May; Wilhelm Fleischmann Benno; Martiny.

TELEGRAPH BETWEEN JAPAN AND COREA.

REPORT BY CONSUL JONES, OF NAGASAKI.

I have the honor to inform you that telegraphic communication between Nagasaki and Fusan, Corea, was officially opened on the 15th of January, 1884.

The Japanese Government land-lines from Nagasaki connect with the Corean cable at Gobuko, a small but flourishing town on the east coast of Kiu-Shiu, famed for its whale fisheries. About 10 miles distant from Gobuka are the well-known Karatsu coal mines.

After leaving the mainland of Japan the cable is landed on the island of Iki, where ultimately the Japanese Government propose to open an office. The island, commercially speaking, is unimportant, the only available harbor for large ships is too open towards the northwest to make it a desirable shelter. There are, however, always a number of junks to be found in the harbor of Gonoura, the situation of the proposed telegraph station.

From Iki the cable proceeds to the island of Tsushima and is landed at the town of Idzugahara, a place of some importance, being the port of call for the Mitsu-Bishi Company's steamers *en route* to Corea.

From Idzugahara, which is situated on the southeast of the island, a land-line crosses the island and connects with the cable in a small open bay on the northwest coast, and then proceeds direct to Fusan, Corea.

Fusan is the most southern town of the peninsula of Corea, has a good harbor, and is distant from Nagasaki about 120 miles.

The cable is worked exclusively by the Japanese telegraph department and by the Japanese operators.

The bulk of the business is in the Japanese language, and the system of signaling similar to that employed on the lines in Japan.

The line was opened so recently that I am unable to procure statistics as to the traffic, or to hazard an opinion as to what the prospects of the enterprise really are. Very little can be expected, however, until Corea decides upon having a telegraph system throughout her empire, in order to connect the most important centers with the outer world. The rates for telegrams are, 40 cents per word to Tsushima, and 50 cents to Fusan from Nagasaki.

ALEXANDER C. JONES,
Consul.

UNITED STATES CONSULATE,
Nagasaki, Japan, March 7, 1884.

TEA TRADE OF FOOCHOW.

REPORT BY CONSUL WINGATE, ON THE TEA TRADE, DURING THE SEASON OF 1883.

The first musters of tea were placed on the market on the 21st of May, but no settlements of Congou were reported until the 11th of June. During the following week a large business was done, although buyers for the Australian market held out until the 1st of July for more favorable prices.

The first steamer for London left on the 16th of June, 1883, and the last on the 26th of January, 1884. The first invoice for the United States was certified at this consulate on the 19th of June, 1883, and the last on the 22d of January, 1884.

The total export during the season, as per customs returns, was 84,173,501 pounds. Of this there were sent to—

	Pounds.
Europe	56,933,042
Australia and New Zealand	15,398,349
South Africa	1,070,244
America	2,236,074
Coastwise—south	2,154,184
Coastwise—north	6,381,608
Total	84,173,501

Of the tea sent coastwise north, 4,423,116 pounds was brick tea for Russia via Tientsin.

Of the tea sent to Europe, consignees' returns report 55,775,767 pounds as for Great Britain, and 525,720 pounds as for the Continent. The total export the previous season was 88,202,530 pounds.

The amount of tea sent from this port to the United States, as per invoices certified at this consulate, during the season of 1883, was 2,895,556 pounds. The previous season it was 3,555,776 pounds.

Of the tea sent to the United States the past season 1,961,857 pounds was Oolong and Pouchong, 604,932 pounds was Congou and Souchong, 44,914 pounds was Pekoe and sorts, and 283,853 pounds was undescribed; 2,410,921 pounds went to New York, 484,635 pounds went to San Francisco.

Of the tea sent to New York 30,357 pounds was sent via Hong-Kong and San Francisco; 724 pounds was sent via Shanghai and San Francisco; 363,817 pounds was sent via Amoy; 21,020 pounds was sent via London, and 1,995,003 pounds was sent direct. That sent direct was carried in four British steamers, which took part of their cargoes at other ports.

The tea for San Francisco was all sent to Hong-Kong to be forwarded thence, 239,985 pounds in steamer and 244,650 pounds in sailing vessels.

Of the tea sent to San Francisco 35,297 pounds was declared to be in transit for British Columbia, and 54,379 pounds for Canada. Of that sent to New York 325,798 pounds was for Canada.

The invoiced value of all the tea sent to the United States was $725,575.99. The previous season it was $817,476.01.

During the season one German and sixty British tea steamers cleared for London, and fourteen British steamers and one sailing vessel for Australia and New Zealand.

The only sailing vessel employed in the direct tea trade of this port was a schooner of 237 tons, which was loaded for New Zealand.

The most noticeable incidents of the season were a strike of the matting and rattanning men in the middle of July, and the agreement of the tea men in September not to show any more musters after the 20th of October. The strike interfered for a short time with shipping off, but was soon settled, for the time, by the headmen agreeing to work until the end of the season upon the old terms. The agreement of the tea men had the desired effect of limiting the supply and stiffening the

rices. At the close of the season there were only 303 chests on the narket.

The foreign merchants have not been made happy by desired profits n the season's business.

J. H. WINGATE,
Consul.

UNITED STATES CONSULATE,
Foochow, March 20, 1884.

FORESTS AND MINES OF SAINT MAURICE.

REPORT BY CONSUL WILSON, OF THREE RIVERS, QUEBEC.

LUMBER INDUSTRY OF SAINT MAURICE.

Lumber is the all-absorbing industry of this consulate district, and ll other interests are subordinate thereto. This (Saint Maurice) district has been worked extensively for the production of pine and spruce umber for about fifty years. Previous to that time the operations were f a very limited and primitive nature and scarcely worth recording. The average quantity of lumber produced in this district may be stated s follows, per annum: 40,000,000 feet pine, board measure; 30,000,000 eet spruce, board measure.

The greater portion of lumber is sawn into deals (3 inches thick) for he English market. A portion is sold for the United States markets f Whitehall, Burlington, and New York, &c., and some is exported to outh America, Australia, Cape of Good Hope, Portugal, West Indies, Newfoundland, &c. Of course, the local demand for Montreal, Quebec, nd other markets absorbs a portion of the supply. Of recent years he millers are making more and more hard-wood lumber, such as birch, aple, ash, elm, and basswood, and also some hemlock.

In addition to the usual manufacture of sawn lumber, some railway ies are shipped to the United States, these railway ties being mostly f tamarack, hemlock, and cedar.

Large lots of hemlock bark, hemlock-bark extract, shingles, fence-ickets, laths, paving-blocks, match-blocks, &c., are turned out and hipped to the United States and elsewhere.

The quantity of timber now standing in the above-mentioned territory s very great, and more than I can attempt to estimate. I believe the upply will hold out for many years to come. I base my opinion on a nowledge of the immense extent of timbered lands in the territory, rom personal conversation with the most practical and intelligent of he holders of the "limits," and of those engaged in cutting and ship-ing the lumber, and from the fact of the Saint Maurice territory being uch a rough, mountainous district, and the land being generally of a oor character, uninviting to the agriculturist, and owing to the absence f railway communication or even good horse roads. It is extremely nlikely that this district will be settled by farmers for many years to ome. Of course, a few isolated settlers, chiefly along the main banks f the Saint Maurice River, are to be found, and their number will increase slowly. At the same time, I admit that the choice pine (free from nots and other defects) is gradually being cut away, and that it is becoming scarcer and scarcer year by year, but there is still a very large

quantity of pine suitable for general use, and an almost unlimited supply of spruce remaining in the territory.

The area of timber-producing territory may be given as extending from near the river Saint Lawrence to about 120 miles northward. Farther north, no good timber grows until the neighborhood of the Hudson Bay is reached, and there is but little in that section. I may mention that south of the Saint Lawrence, in my consular district, there is not much pine remaining, but plenty of spruce, hemlock, tamarack, &c.

The different kinds of manufactured lumber proper, invoiced and shipped through this consulate for the United States during the year ending September 30, 1883, amounted to $171,223.97, while for the year closing September 30, 1882, it amounted to $138,956.02, making an increase during the past year of $32,267.95. The falling off of the British market for the past year has been very marked, I am unable to say how much less than usual.

Most of the leading mills here were established in the interests of the English trade, for furnishing deals to be resawn and worked up in the European centers. But this market had become overstocked.

THE FORGES OF SAINT MAURICE AND RADNOR.

Eight miles north of the city are situated the famous old Saint Maurice forges, which have been worked with varying success since 1668. As far back as 1752 there were employed at the Saint Maurice forges, between two hundred and fifty and three hundred men, and the products of these forges were used all over the Dominion. The articles turned out were stoves, all sizes, and various patterns, cooking utensils, large kettles for making potash and maple sugar, cast and wrought iron work for the saw-mills, &c., large quantities of pig and bar iron were also exported to France, and later on to England, where the Saint Maurice iron was at once admitted to compare favorably with the cast iron produced in Europe. Under the French Government cannon, shot and shell were cast at these forges. At an early day in the construction of railroads in Canada, these forges turned out many car-wheels, and in 1851 the car-wheels of this manufactory obtained the first prize at the London Exhibition. As proof of the good quality of these wheels, it is said that some of them have been in constant use by the Grand Trunk Railway of Canada for the last twenty-five years. Of late years but few railroad car-wheels have been made, for, owing to the want of sufficient capital, bad management, or Yankee grit, they find it impossible to compete with the American manufacturers. Radnor forges are fifteen miles from this city, in nearly the same direction as Saint Maurice forges. They are larger and more important, and are operated more successfully. The Radnor iron products are well known, and cannot be surpassed for their excellence. The mining rights connected with these forges extend over a large district of country, which also supplies the necessary wood for charcoal. Lake "La Tortus," which is situated on the Radnor lands, supplies a large quantity, an immense deposit of this valuable mineral being found at the bottom of the lake, and is brought up by dredging. Formerly these works turned out much pig iron for the United States market—as much as $50,000 per annum.

While these mines are interesting historically, they cannot compete with our American works. However, I am of the opinion that with the right kind of men in possession and plenty of money to command, they could be worked more successfully than at present.

OCHER DEPOSITS.

There are large deposits of ocher, in this vicinity, which have never been worked to any extent. Previous to the repeal of the reciprocity treaty, an American company worked the ocher fields of Pont du Lac, near the city, but like most other enterprises that have been started in this neighborhood, it became too feeble to thrive in the face of the small tariff that was placed upon the article by our Government.

JAMES M. WILSON,
Consul.

UNITED STATES CONSULATE,
Three Rivers, Canada.

PUBLIC HEALTH OF NAPLES.

REPORT BY CONSUL HAUGHWOUT.

I have the honor to transmit to the Department of State certain information respecting the public health and the death rate of the city of Naples.

Great dissatisfaction has been expressed by the Neapolitans at certain reports that have been spread abroad adverse to the sanitary condition of this city and to its desirability as a place of resort in winter, reports which have had no foundation in fact, and which have been productive of the result desired by the originators thereof, namely, that of deterring foreigners from visiting this province. To place before the Department the truth upon this subject, as near as can be ascertained, is the object of this dispatch.

As far as concerns the geographical position of Naples, little remains for me to say. It is well known, that no city of Europe has been more favored by Nature than this; certainly there is none where, during the winter months, such balmy and invigorating air can be enjoyed, and none where, with reasonable prudence and ordinary common sense, foreigners can enjoy better health, or if not better health, at least such health as they enjoy in their own land.

The reputation for unhealthiness acquired by Naples within the past fifteen years has been greatly exaggerated, perhaps not without some foundation. The rate of mortality, however, is much higher in several of the great capitals of Europe than it is here. Yet it is not so much the *general death rate* as the proportion of deaths from *infectious diseases* that has given Naples a bad name. It is just upon this point that the popular error has arisen. Naples is held up as being a city wherein malaria and fever are prevalent at all seasons of the year and under all conditions, where the traveler may see many of the greatest beauties and curiosities of nature with the greatest danger to his health. One single statement, made by the Neapolitan correspondent of an English journal, has had much to do with deterring foreigners from coming here in the usual numbers during the past autumn. The rumor was started that yellow fever existed at Torre del Annunziata, within this consular jurisdiction. Inquiry was made by me as to the truth of that report. It proved to be without further foundation than this, that two or three of the inhabitants of that town were suffering from a mild attack of a fever somewhat analogous to typhoid fever, but who were, at the time the report was first circulated, already convalescent. There was no

recurrence of the malady, and at present time the city of Naples and its dependencies are in a healthy and satisfactory condition.

I had occasion in a former report upon the health of this city to notice the precautions taken by the city government to prevent the introduction of anything likely to produce sickness among the inhabitants thereof. These precautions are still observed, and a quarantine of ten days is now in force upon all vessels coming from Egypt.

Of course the infectious diseases that are for the most part spoken of as prevalent here may be said to arise within the city and to be provoked by local causes. The diseases classed as infectious by the Italian physicians are small-pox, measles, scarlet fever, typhoid and typhus fevers, diphtheria, croup, and whooping-cough, so classified in a pamphlet of Dr. Rafael Serafino, of this city, upon the question of vaccination in the province of Naples, wherein the following tabular statement is given, comparing the rate of mortality at Naples from infectious diseases with that of the other great cities of Europe:

Cities.	Population.	Total deaths.	Average per 1,000 inhabitants.	Infectious diseases.							Average per 1,000 inhabitants.		Average per 100 deaths.	
				Small-pox.	Measles.	Scarlet fever.	Typhoid and typhus fevers.	Diphtheria and croup.	Whooping-cough.	Total.	Of all infectious diseases.	Of small-pox alone.	From all infectious diseases.	From small-pox alone.
Naples	494, 314	14, 609	29. 5	14	96	486	316	397	34	1, 343	2. 71	0. 02	9. 19	0. 09
Rome	300, 467	7, 919	26. 4	21	258	56	124	288	7	754	2. 50	0. 07	9. 52	0. 26
Milan	321, 839	9, 605	29. 8	8	139	84	377	367	....	975	3. 02	0. 02	10. 15	0. 08
Turin	252, 832	6, 926	27. 4	1	205	45	238	379	32	900	3. 56	....	13. 00	0. 01
Paris	2, 225, 910	58, 674	26. 3	660	1, 005	162	3, 198	2, 384	203	7, 612	3. 41	0. 29	12. 97	1. 12
London	3, 893, 272	82, 905	21. 3	431	2, 329	2, 004	1, 027	1, 736	4, 647	12, 174	3. 13	0. 11	14. 68	0. 52
Brussels	165, 350	3, 952	23. 9	82	22	7	46	36	58	251	1. 51	0. 49	6. 35	2. 07
Berlin	1, 156, 382	30, 419	26. 3	5	145	613	504	2, 133	293	3, 693	3. 19	....	12. 14	0. 02
Vienna	740, 622	21, 540	29. 1	802	201	406	184	516	165	2, 274	3. 07	1. 08	10. 55	3. 73
Budapest	387, 143	12, 859	33. 2	379	150	249	239	368	133	1, 518	3. 92	0. 97	11. 80	2. 94
St. Petersburg	927, 467	32, 624	35. 2	716	184	1, 150	1, 974	1, 635	252	5, 911	6. 37	0. 77	18. 12	2. 19
Munich	238, 000	7, 270	30. 5	7	102	50	42	283	89	553	2. 32	0. 03	7. 60	0. 10

Upon the basis of the above figures it is possible to affirm that Naples, when compared with the twelve cities placed in the above table, is found to be in the same condition as Milan with respect to the mortality arising from small-pox, and to come immediately after Turin and Berlin; while, in the scale of mortality arising from infectious diseases, it occupies the fourth place, all of which signifies that it is in a healthier condition than the other eight cities, the most important of Europe.

It is to be noticed, also, that London, which is in the best condition, when the total death rate per thousand inhabitants is considered, falls to the seventh place in infectious diseases, and to the eleventh when the death rate from infectious diseases is calculated upon the average per one hundred deaths. Hence, we may conclude that at Naples deaths do occur from other causes than infectious diseases; yet the contrary is often asserted.

It must not be understood from what I have said upon the relatively healthy condition of this city that persons may come here and commit what in their own land they would deem imprudences. The same care should be observed here at all times as in their own land, and particu-

larly in winter, when the mildness of the climate seduces people into going about improperly protected. In summer the city is almost free from parties of foreign visitors. Those who do come pass away rapidly, once in a while leaving a member thereof sick and exhausted from overwork, not attributable to climate or surroundings, but to his own thoughtlessness. In winter the same thing occurs; cases of sickness of greater severity are developed from the same causes; death sometimes ensues; the survivors leave the city with bitter criticisms upon the climate, and with anything but pleasant recollections of the place, and at the same time in profound ignorance of their own folly during their sojourn.

FRANK G. HAUGHWOUT,
Consul.

UNITED STATES CONSULATE,
Naples, December, 1883.

TRADE AND INDUSTRIES OF FIJI.

REPORT BY CONSUL VAN CAMP, OF LEVUKA.

American lumber.—From American ports I have but to note the arrival at Levuka of the barkentine Kate Flickenger, Captain Young, with a cargo of timber for the local building firm of Wilson & Murchie. The vessel was from Port Townsend, and arrived here after a fair passage, on the 25th of January. The deck portion of the cargo, which was one-third of the whole or more, was discharged in Levuka, and the balance taken to Tura. The Kate Flickenger was the deepest laden timber ship that ever came to this port. As she entered she appeared to be a solid block of timber fully half way up her lower masts. Very little delay occurred before she commenced discharging, and thus the work went on with most commendable dispatch. This supply seemed to meet all immediate demands, as a brigantine, the Gleaner, from New Zealand, with a like cargo, arriving a few hours later, lay here several days before the owner of the stuff could get an offer for it, and eventually it was disposed of at a loss. The builders at our new capital are beginning to experience a slackness, all pressing wants in the way of residences having been met. This, of course, does not mean complete cessation; but the accepting of a contract to erect a house on the builder's own terms is no longer solicited as a favor.

Sugar and sugar mills.—The new local enterprise in connection with the manufacture of sugar continues vigorous, and there are projects on foot for erecting mills wherever there is good available land for cane-growing. Fiji can boast at the present day some half score of sugar mills, and some one or two of them are second to none in size and power, and the general turn out of sugar has become an important increment to the cargoes of our outward-bound mail steamships. Judging from the large orders in the hands of the mill-owners, and the well authenticated reports which reach us from time to time, Fiji sugars must already have great command of the Australian and the New Zealand markets. I think I need not say that the local article has long since virtually excluded foreign sugars from the list of our imports.

Tea plantations.—China no longer has the monopoly of the tea trade; British India has during some years past been an intelligent and fairly successful rival of hers, but now Fiji throws down the gauntlet at the

feet of both. Fiji teas before long will do for foreign teas what her locally produced sugars have done for foreign ones. A planter on the island of Tariuni, Mr. James Mason, is growing and manufacturing tea very successfully. Australia and New Zealand experts have pronounced very favorably upon it, and the matrons of Fiji, who have given it a trial, have, in spite of misgivings, decided in its favor.

Coffee.—In defiance of a blight which made its appearance some four years ago in our new coffee plantations, and the presence of which inflicted upon our official scientists a craze to stamp it out with the most violent measures, however disastrous their acts might prove to the owners of the property, the export of raw coffee from these islands has been very regular for some time past. The article itself has met with much praise; but complaint is made that in the curing process a peculiar tint which recommends the article favorably to the dealers, is not obtained. This, however, is a defect which better experience will remedy; and with a more brisk demand for coffees than has been prevailing of late, there can be no doubt that coffee growing will be one of the flourishing industries of Fiji.

Fruit-growing.—Planters, both white and native, have of late been turning their attention very much to fruit-growing, and no steamship leaves our ports for the neighboring colonies without taking fruit as part of her cargo. The fruit shipped is principally bananas and pineapples, both products being of a very fine and much sought for description. Pines from 10 inches to a foot long are a common production here. Oranges, lemons, limes, and other such common tropical fruits are almost regular articles of export. Taking into consideration that the lime is not a good keeping fruit, and that countless bushels of it can be obtained at small cost, I am surprised that no one has taken up the preparation of lime juice for exportation. It has, however, been noted that, seeing Fiji produces sugar, fruit preserving, as an industry, should receive attention.

Copra.—The old copra industry still maintains a foremost place, and it supplies the outward cargoes of nearly all the large sailing vessels visiting our ports. Indeed the harbor of Levuka is seldom without a vessel or two of this description waiting their turn to be filled from the stocks accumulated in the shippers' stores. Nearly all the vessels that run the cargoes of copra from here are German and Norwegian, the export trade in the article being almost entirely in German hands. Many of the white planters are enlarging on this industry very sensibly, as extensive areas of young trees have commenced to yield their fruit, but the native Fijians are so hampered and fettered by ordinances and official exactions that any progress on their part is quite out of the question. One of the clauses in the "native labor ordinance," framed and put in force but a few months ago only, provides that if a Fijian works for a white man any period over a month continuously, he shall at the end of his term of employment return to his town and there work for his matagali or tribe for a like period for nothing. If the man disobeys this law he subjects himself to be punished as a felon.

Fine woods.—I may mention that an American citizen, M. B. Morris, many years resident in Levuka, has secured from a friend some cubical specimens of several varieties of Fiji timbers, one side of each of which has been carefully and skillfully French polished. He proposes to forward them to America at an early opportunity. The collection should have great interest for the cabinet-makers who may be so fortunate as to get a chance of inspecting them. It is my opinion that Fijian woods will enter extensively into cabinet-work at no distant period, their grain, colors, and consistency being very favorable.

Hurricanes.—Our hurricane season, which extends over the first three months of the year, is drawing to a close without our having experienced any very bad weather in this group other than that the present summer has been a particularly hot one, causing the skin disorder of "prickly heat" to be very general among both young and old. We have had, too, a few very heavy and protracted rainfalls, which flooded our creeks and rivers and did some damage to property. In the early part of February and during three days a strong gale blew from the north, and necessitated the striking of topmasts and riding with both bowers down on the part of the shipping in our harbors. Two vessels parted their cables, but having daylight they were so handled as to escape damage. Most of the bread-fruit trees were stripped, and after the gale had subsided the hills of Ovalau wore an appearance as if a hot blast had swept over them. The island of Bau, being exposed to the full force of the gale, was nearly laid in ruins, while about the same period the island of Rotuma, some 300 miles northeast of Fiji, was almost devasted. It is estimated that it will take this island two years to recover from the effects of this hurricane. As a rule, the labor-recruiting vessels do not go out at this season. Owing, however, to the large demand for labor and the very inadequate supply, the rule in the present season has been departed from, but no disaster has been reported as a consequence.

A. VANCAMP,
Consul.

UNITED STATES CONSULATE,
Levuka, March 17, 1884.

EXPLORATION OF THE PILCOMAYO.

REPORT BY MINISTER GIBBS, OF LA PAZ, BOLIVIA, OF THE EXPLORATION ACROSS THE GRAN CHACO, FROM BOLIVIA TO ASUNCION, PARAGUAY.

For many years, during Spanish colonial times, and since the existence of this republic, it has been the dream of science, geography, religious missions, and venture, to explore from the province of Tarija the southern part of Bolivia, across the Gran Chaco, in a southeast direction to Paraguay.

By examining any first-class library map it will be seen that an immense territory of over fifteen degrees of latitude and four of longitude is without marks of towns, and comparatively unknown. It is marked "El Gran Chaco," as being unexplored.

Mr. Martin de Moussey, the French geographer, says:

The Gran Chaco is an immense territory of over 25,000 square leagues, situated between the eighth and thirtieth degrees of latitude south; bounded on the south by the river Juramento, on the east by the rivers Parana and Paraguay, and on the west by the Andean Plateau.

It was said to be partly inhabited by savages, who roamed in nomadic bands, living on vegetable products, game, and fish and turtle from the rivers. Many military and scientific expeditions had miserably failed; some by the hands of the savages, others under the deadly influence of the climate; some lost in the numerous deserts and jungles; while many returned, for different reasons, convinced of the impossibility of crossing the plains, woods, and marshes, or of studying the unknown lands.

Finally, an expedition left Tarija on the 6th of July last, and arrived at Asuncion, Paraguay, November 12, all well, without losing a single per-

son. This has been the cause of gratification to the Government, and I inclose a translation of an article from the Government organ here.

The expedition left Tarija and went in an east-southeast direction to Caiza, in latitude 22°. Caiza is a frontier town on the east, in Bolivia, and the last settlement of the whites. From this place it was, to a certain extent, unknown territory. They went in an easterly direction to an Indian settlement called Igmopetit, but in old Jesuit missionary maps it is named Santa Barbara. Here the expedition left men, arms, tools, and munitions, forming a port and giving it the name of "Cremieux," in honor of the French naval officer who had charge of a Bolivian expedition, and was massacred in April, 1882, with all of his companions, by the savages Tobas or Tupietes. From Cremieux they went southeast to another Indian settlement, "Cavago Repote," now named Port "Quijano," in honor of the present minister of foreign affairs, and who is the principal promoter of the expedition. Thence to Piguando, also known by the name Bello ———, now named Port "Campero," in honor of the President of the republic. In these places garrisons were established and troops left with all necessaries. From this place they went in a southeast direction to Asuncion.

As expeditions have started from both sides, Paraguay and Bolivia, all failing, this has been considered quite a triumph. When details are published, if I am here, I will try and send a copy to the Department.

By examining any good map, in about latitude 27° south, longitude 67° west, the city of Tucuman, in the Argentine Republic, will be found. The Argentines have a railway that runs from Rosario, on the Parana River. This road is very important, tapping the best provinces of the Republic, and they are now pushing it on to Salta, direct north of Tucuman, some three degrees, or about latitude 24° south, and it is the intention to push on to the frontier, province of Concepcion, in Bolivia, a great agricultural and mining country. This path, explored from Tarija to Asuncion, is in a direct southeast direction, and much shorter, striking the navigable Paraguay some eight degrees of latitude north of Rosario.

RICHARD GIBBS.

LEGATION OF THE UNITED STATES,
La Paz, Bolivia, December 31, 1883.

EXPLORATION OF THE PILCOMAYO.

[Translated from El Comercio of La Paz.]

The last mail from the south has brought interesting details of the arrival of the Pilcomayo expedition at Asuncion, in Paraguay, which we hasten to place before our readers from notes that have been given us at the ministry of foreign affairs, and also copies from La Nacion of Buenos Ayres.

The members of the expedition were composed of Dr. Daniel Campos, government representative; Col. Miguel Estensorio, secretary; M. Thouar, French engineer; Lieutenant-Colonel Pareja, military commander; Lieut. Col. Juan Balza, second; various subaltern officers, 150 soldiers, and five females, who voluntarily joined the expedition to follow their husbands. Of the troops, 75 infantry of the army, and 75 National Guards, volunteer from Tarija.

The expedition left Tarija, crossing the Chaco, keeping on the right bank of the Pilcomayo; arrived at Barranquerita (villa de San Pedro) in good order November 12, not losing a man or having any sickness; being sixty-five days on the route, and the last fifteen days the expeditionists subsisted on mule meat, their provisions being exhausted.

The Tobas, Chorotis, Matacos, Guisnayos and other tribes received the expedition while crossing the country in a hospitable and pacific manner. Only the ferocious Tupietas, in great numbers, tried to obstruct the expedition, but after a combat of wo hours, in which the Indians suffered heavy losses, were thoroughly defeated.

The chiefs of the expedition entered into Asuncion of Paraguay the same day, November 12, and were received with extreme cordiality by the President, General Caballero, and his cabinet.

The Pirapo, Paraguayan gun-boat, left the following day for Barranquerita, where the expeditionary division band remained, and returned with them on the 14th. This was a day of jubilee in Asuncion. Government and people showed the expeditionists every kind of affection, admiration, and enthusiasm.

La Reforma, of that capital, with joyful comments, speaks of the realization of the undertaking initiated the latter part of 1843, during the administration of General Ballivian, who sent the expedition of General Margariña, followed by that of Van Nival, and others equally fruitless, and ends the article dedicated to the expeditionists as follows:

"We salute the heroic band which has just crowned themselves with a diadem of a most noble triumph, opening up a new path to progress and prosperity for both countries, and we hope that its valiant members, of which it is composed, will rest with satisfaction in our society, after the pains and labors through which they have passed, to gain a just and legitimate glory."

Our legation in Buenos Ayres, so worthily filled by the illustrious and patriotic citizen, Santiago Vaca Guzmán, has behaved on this occasion, as on others, with all due carefulness. As soon as he heard of the arrival of the expedition at Paraguay he remitted the sum of $10,000, and a letter of credit for a larger amount, if it was necessary, to return to Bolivia.

The Government on its part had previously dictated and repeated for this purpose various instructions to the legation in the Argentine Republic, and to the prefect at Tarija for remission of money and means for the expedition.

When rested from their fatigues, and their wants provided for, they will take a steamer for Rosario and there take the rail for Tucuman to return to Tarija.

The intelligent engineer, Mr. A. Thouar, who filled a most important part in this expedition, will go to Buenos Ayres, from whence he proposes to return to Bolivia via Magellan Straits, promising to publish as soon as convenient a full description of his voyage, with notes, maps, and scientific observations.

Again, we congratulate the fortunate expeditionists of the Pilcomayo, the nation, and the administration of General Campero for the brilliant success of the undertaking, which, in the words of Señor Guzmán, "From the conquest up to the present it is the first that has been victorious, which places the Paraguay and the Plate in communication with the heart of Bolivia. A new route is opened to commerce and industry, and brings into an intimate sisterhood three countries that only a few years ago lived nearly unknown to each other."

TARIFF OF BRITISH GUIANA FOR 1884.

REPORT BY CONSUL FIGELMESY.

I have the honor to transmit herewith a copy of the colonial customs ordinance for the year 1884, authorizing the duties to be levied by tax.

PH. FIGELMESY,
Consul.

UNITED STATES CONSULATE,
Demerara, January 19, 1884.

BRITISH GUIANA.

COLONIAL DUTIES OF CUSTOMS ORDINANCE, No. 1, 1884.

[Collated with the official record.]

Whereas it is expedient that a portion of the supplies necessary to defray the annual colonial expenditure should be raised by duties of customs, and that the same should be raised, levied, and collected by ordinance: Be it therefore enacted by his excellency the governor of the colony of British Guiana, with the advice and consent of the court of policy thereof and of the financial representatives of the inhabitants of the said colony in combined court assembled, as follows:

1. There shall be raised, levied, collected, and paid the several duties, as the same are respectively set forth in figures in the schedule herein contained, upon all goods, wares, and merchandise enumerated in the said schedule, which shall be imported into British Guiana, or taken out of bond for consumption in the colony, on and after the eighteenth day of January, one thousand eight hundred and eighty-four.

SCHEDULE OF DUTIES

Payable on articles imported or taken out of bond for consumption on and after the 18th day of January, 1884.

Arrowroot, per pound	$0 00½
Bacon, per pound	02
Bread, navy biscuit or crackers, or other kinds, per 100 pounds	50
Bricks, per 1,000	30
Buckets and pails of all kinds, per dozen	25
Butter, per pound	02
Candles, tallow, per pound	01
Candles, spermaceti, wax, adamantine, hydraulic press composition, or any other than simple tallow, per pound	05
Cheese, per pound	02
Chocolate, including all kinds of prepared cocoa, per pound	04
Cigars, and cigarettes, per pound	1 20
Clapboards, per 1,000	1 50
Coals, per hogshead, including the packages	32
Coals, loose, per ton	48
Cocoa (raw), per pound	01½
Coffee, per pound	01½
Confectionery, including sweetened preserves, per pound	05
Cordage, including gasketing, per 112 pounds	1 00
Corn, per bushel	10
Corn brooms, per dozen	20
Cornmeal and oatmeal, per 100 pounds	25
Dogs, per head	5 00
Donkeys, per head	1 00
Fish, dried, per 112 pounds	50
Fish, pickled:	
Salmon, per barrel of 200 pounds	2 00
Mackerel, per barrel of 200 pounds	1 00
And all other sorts, per barrel of 200 pounds	25
Fish, smoked, per pound	00½
Flour, of all descriptions, per barrel of 196 pounds	1 00
Ganje, per pound	3 00
Ginger (raw), per pound	01
Grain of every description not otherwise specified, and every kind of beans; peas and pulse of every description and every kind, and whether whole or split, per bushel	05
Ground feed, middlings, shorts, and bran, per bushel	05
Gunpowder admitted by the controller of customs as blasting gunpowder, per pound	01
Gunpowder, all other kinds, per pound	20
Hams, and all other dried or smoked meats, and including sausages other than in tins, per pound	02
Hay, per 100 pounds	10
Hoops, wood, per 1,000	1 50
Hoops, iron, per 112 pounds	10
Horses, stallions under fourteen and a half hands in height, each	100 00
All other horses, per head	7 00
*Lumber, of all kinds, per 1,000 feet, board measure	2 00
Malt liquor, in wood, per hogshead	5 00
Malt liquor, in bottles, per dozen quarts	24
Malt liquor, in bottles, per dozen pints	12
Matches, per gross of boxes, containing each at the rate of 100 matches, if in packages containing not less than 10 gross	40
Matches, per gross of boxes, each box containing at the rate of 100 matches if in packages containing less than 10 gross	80
Match-splints, per case, each case containing equal to 10 gross of matches of the ordinary length	3 75
Mules, per head	5 00
Muskets, guns, and fowling pieces, each	2 00
Oats, per bushel	10
Opium, charas, or bhang, per pound	2 50
Oils (other than gasoline, when admitted with the sanction of the governor and court of policy) which give off an inflammable vapor at a temperature of less than 73° F., as ascertained by the test which is established in England by the 42d and 43d Victoria, cap. 47, per gallon	3 00

*Spruce and white pine lumber subject to a deduction of 5 per cent. for splits.

her, including gasoline, when admitted with the sanction of the and court of policy (essential, perfumed, and castor oil excepted),

ı	$0 20
ll kinds, per 112 pounds	25
pound	01
caps, per 100	04
luding revolvers, each	10 00
barrel	50
00 pounds	25
barrel	50
ound	00½
f all kinds, per 1,000	50
pack	08
ound	02
1,000	1 00
ound	75
than perfumery, per pound	00½

trong water, of all sorts, not sweetened, not exceeding the strength by Sykes' hydrometer, and so on in proportion for any greater of proof and for any greater or less quantity than one gallon, at

n	2 50
spirits, liquors, bitters and cordials, at per gallon	2 50

following perfumed, viz: Cologne water, Florida water, bay rum, water, at per gallon 1 00

headings, white oak, per 1,000	2 00
very other description, per 1,000	1 50
pound	04
rrel	50
er pound	00½
und	12

in leaf, if in packages not less than a hogshead of 800 pounds, per

	30
do., if in smaller packages, per pound	45
manufactured (cigars, cigarettes, and snuff excepted), per pound	45
pes (clay), per gross	1 00
ickled, dried, or smoked, per pound	02
, crude, per gallon	50
, spirits of, per gallon	18
ot containing alcohol or spirits, per gallon	18
ntaining any quantity of alcohol or spirits, per gallon	2 00

admitted by the comptroller of customs as claret or tarragona and e declared value of which shall be any sum not exceeding two dol- s a gallon—

rood, and containing less than 33 per cent. of proof spirit as veri- by Sykes' hydrometer, at per gallon 50

led, per dozen quarts	72
led, per dozen pints	36
ll other descriptions, bottled, per dozen quarts	2 00
ll other descriptions, bottled, per dozen pints	1 00
ll other descriptions, in wood, per gallon	80

hese rates upon any greater or less quantity of such goods, wares, and se, respectively.

all other goods, wares, and merchandise not herein enumerated, which nported or taken out of bond on and after the eighteenth day of Janu- ousand eight hundred and eighty-four, there shall be raised, levied, col- l paid, during the period aforesaid, an ad valorem duty at the rate of seven ı, or seven dollars upon every one hundred dollars, of the value of such es, and merchandise at the place of shipment: Provided, That the follow- s shall be exempt from duties:

SCHEDULE OF EXEMPTIONS.

arcoal.
assed by the customs authorities as the personal baggage of passengers in the colony from abroad.
led, dried, or smoked.
ne and road metal of any description.
d coin.
s, calves, heifers, steers, and oxen.

---

n tobacco to be paid on the weight thereof, being certified, either by a gher and gauger or otherwise, to the satisfaction of the comptroller of co- oms.

Cotton seeds.
Fire-engines.
Fresh fish and turtle.
Fresh meats.
Fruits, vegetables, and ground provisions, not enumerated.
Goods, stores, arms, and ammunition, imported by order of the executive government.
Hogs and pigs of every description.
Horses, baggage, and furniture of officers in Her Majesty's naval and military services.
Ice.
Lard.
Lime, including the packages in which it is contained.
Machinery and apparatus for electric light.
Machinery, comprising the following: Machinery employed in the drainage of land or in mining operations, or in the manufacture or preparation of the produce of raw materials, or in the manufacture or preparation of manures, whether imported for sale or on private account; also machinery and implements intended for waterworks, tanks and lamp-posts, with their appurtenances; paving and curb stones and draining pipes, imported by the mayor and town council of Georgetown or by the board of superintendence of New Amsterdam; also machinery, retorts, gasometers, and pipes imported for the construction of gas-works in this colony; machinery and apparatus imported for electric lighting; locomotive engines; railway plant; machinery for steamboats, saw-mills, and foundries; steam boilers of every description; steam-boiler plates and tubes; all pans, teaches, tanks, and other vessels used exclusively in the manufacture of sugar or for the storage or supply of water; locks or sluices for sea defenses or water supply; iron cane punts, iron bridges, grating bars; tile and brick making machinery; and articles imported for the use of the pilot service of the colony.
Manures, including nitrate of soda, plaster of Paris, and whiting.
Molasses.
Materials and church furniture which may be specially imported for any place of worship of the Christian religion in this colony.
Packages in which goods are imported (except trunks and cannisters and except hogsheads and puncheons not containing lime or coals).
Patterns or samples.
Pork, admitted by the comptroller of customs as pickled.
Poultry.
Printed books not subject to duty under ordinance No. 14 of the year 1851.
Printing presses and types, printing paper and printing ink, imported by or directly for the conductor of any newspaper or printing establishment for the exclusive purpose of being used by him in the course of his trade.
Provisions and stores of every description imported by Her Majesty's Government for the use of Her Majesty's land and sea forces.
Salt.
Sewing-machines.
Sheep.
Specimens illustrative of natural history; garden seeds, bulbs, and roots.
Steam-plows, steam-diggers, and steam-dredgers.
Telegraph instruments and other materials imported by telegraph companies and necessary for the use and construction of their works, offices, and stations in this colony.
Uniforms, arms, ammunition, accouterments, and prizes imported by and for the use of Her Majesty's land or sea forces or of the colonial militia or any volunteer force or rifle association sanctioned by the governor.
Wines, spirituous liquors, and stores imported by and for the use of the governor.

3. The provisions of ordinance No. 16 of the year 1854, which relate to the warehousing of goods shall not be applicable to gunpowder imported during the continuance of this ordinance; and the duty on all such such gunpowder shall be paid immediately on importation.

4. For the purpose of encouraging the trade of the colony with other countries, parties exporting goods, wares, and merchandise on which duties shall have been paid under and by virtue of this ordinance, or any other ordinance, shall be entitled to a drawback of duties on such goods, wares, and merchandise at and after the rates and amounts levied and paid on such goods; and the mode, manner, and time of claiming such drawback shall be subject to the provisions of ordinance No. 16 of the year 1854, and every other ordinance that may be hereafter passed by the governor, with the advice and consent of the court of policy, regulating drawbacks: Provided, always, that no drawback shall be allowed on any wine or spirituous liquor or gunpowder which shall be exported from the colony at any time during the continuance of this ordinance.

5. Every contractor with Her Majesty's Government for any service of any of Her Majesty's regular troops stationed in British Guiana shall be entitled to receive back the amount of duty paid on materials or supplies furnished under his contract for the service of such troops: Provided, always, that due proof be made of the payments of such duties and that the nature and quantities of the materials of supplies furnished under such contract be duly certified by the officer commanding the troops.

6. All moneys payable or leviable under and by virtue of this ordinance (unless their collection be otherwise specially provided for) shall be paid to the colonial receiver general or assistant receiver general.

7. Whenever the duties upon goods, wares, and merchandise imported or taken out of bond for consumption in the colony payable by any one person or firm at any one time shall amount to or exceed the sum of $100, it shall be lawful for the colonial receiver general or assistant receiver general to take the joint and several promissory note of any such person or firm, and of some other good and sufficient person or persons, for the payment of such duties, payable thirty days after the date thereof; and every party to any such promissory note shall be deemed to be and shall be held liable in every respect as a principal debtor, to all intents and purposes, in any proceeding upon any such promissory note at the instance of the colonial receiver general or assistant receiver general; and it shall not be competent to any party in any such proceeding to set up any defense other than might be set up by a principal debtor.

8. In default of payment, when due or demanded, of any of the taxes or dues imposed by this ordinance, or of any promissory note allowed by this ordinance to be given for duties, the same, with interest at the rate of 6 per centum per annum from the date when the same became due and payable, when otherwise not specially provided for, shall be enforced and recovered by the colonial receiver general or assistant receiver general by parate execution.

9. No moneys levied, collected, or received under the provisions of this ordinance shall be expended for any purpose whatever not sanctioned by ordinance, unless the moneys received have been appropriated by an annual ordinance of this court.

10. All duties of customs shall be raised, levied, and collected subject to the provisions of any ordinance now in force or which may hereafter be passed by the governor, with the advice and consent of the court of policy, for the purpose of regulating the collection of the colonial customs.

11. The duties of customs imposed and made payable under the provisions of section 1 of ordinance 7 of the year 1883 shall cease to be payable when this ordinance comes into operation.

12. This ordinance shall come into operation and take effect on the publication thereof, and shall continue in operation until otherwise enacted by his excellency, the governor of the colony of British Guiana, with the advice and consent of the court of policy thereof, and of the financial representatives of the inhabitants of the said colony in combined court assembled.

And that no ignorance may be pretended of this our ordinance, these presents shall be printed and published in the customary manner.

Thus done and enacted at our combined assembly held at the Guiana public buildings, Georgetown, Demerara, this seventeenth day of January, 1884, and published on the same day.

HENRY T. IRVING.

By command of the court.

FRANCIS VILLIERS,
Acting Secretary.

TARIFF OF ROUMANIA.

TRANSLATED AND PREPARED BY CONSUL-GENERAL SCHUYLER.

I have the honor to inclose herewith a translation of the Roumanian tariff on imports and exports.

You will notice that the tariff on imports is of two kinds—the conventional and the general tariff, the former being applied only to articles coming from countries which have treaties of commerce with Roumania. Until such a treaty be concluded on our part, the general tariff will be applied to articles coming from the United States.

EUGENE SCHUYLER.

UNITED STATES CONSULATE-GENERAL,
Athens, July 24, 1883.

TARIFF OF ROUMANIA

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	I.—*Live animals.*					
			Francs.	*Francs.*	*Francs.*	
1	Horses, entire, geldings, or mares	Head	Exempt.	Exempt.	2.50	
2	Colts	do	do	do	1.00	
3	Mules and asses	do	2.62	3.00	0.60	
4	Bulls	do	5.00	5.75	1.80	
5	Oxen and buffaloes	do	5.00	5.75	1.80	
6	Cows and buffaloes	do	3.75	4.30	1.30	
7	Young oxen, bulls, and heifers	do	1.40	1.60	0.70	
8	Calves	do	Exempt.	Exempt.	0.30	
9	Rams and sheep (with wool on backs included), goats	do	do	do	0.10	
10	Sheep	do	0.62½	0.70	0.10	
11	Lambs and kids	do	Exempt.	Exempt.	0.05	
12	Pigs	do	2.50	2.90	0.50	
13	Sucking pigs	do	0.30	0.35	0.05	
14	Farm-yard birds	Each	Exempt	Exempt.	0.05	
15	Birds, not mentioned, including winged game	do	Free	Free	0.20	
16	Hair game, large and small	do	do	do	Free	
17	Hunting and pet dogs	do	do	do	do	
18	Hives, with living bees	do	do	do	do	
19	Leeches	1 kilogram	do	do	1.20	
20	Live animals, not mentioned	Head	do	do	Free	
	II.—*Animal alimentary products.*					
	Meat:					
21	Fresh meat	100 kilograms	4.00	4.60	0.25	
22	All kinds of game and killed fowl	do	7.00	8.05	Free	
23	Salted or dried meat, including lard simply salted	do	6.50	7.50	0.40	
24	Smoked meat and all kinds of hog's flesh, sausages, &c	do	20.00	23.00	1.50	12 in cases; 7 in baskets; 5 in bales.
25	Milk	do	4.00	4.60	0.25	
26	Butter, fresh, salted, or melted, and other comestible greases	do	12.00	13.80	1.00	12 in cases, barrels, or casks. For these products in bladders no tare will be deducted.
27	Cheese of all kinds	do	12.00	13.80	0.25	
28	Eggs of fowl and game	do	5.00	5.75	1.00	
29	Honey, melted or in combs, also in hives, the bees being killed	do	6.50	7.50	0.50	
	Fish:					
30	Fresh fish of all kinds	do	4.00	4.60	1.40	
31	Salted, dried, or smoked fish, excepting the undermentioned	do	6.00	6.90	0.25	
32	Sterlet, sturgeon, mackerel, cod-fish, and herrings	do	6.00	6.90	0.25	
33	Tunny, in brine	do	20.00	23.00	Free	
34	Sardines, in kegs, including Russian sardines	do	8.00	9.20	do	

40	Lobsters	do	20.00	23.00	Free	Do.
41	Fresh oysters	do	12.00	13.80	do	
42	Muscles and other shell-fish, full; crabs; snails, comestible	do	2.00	2.30	0.50	
	III.—*Farinaceous products.*					
	Cereals:					
43	Wheat	do	Free	Free	0.20	
44	Rye	do	do	do	0.10	
45	Maize	do	do	do	0.10	
46	Spelt	do	do	do	0.10	
47	Barley	do	do	do	0.10	
48	Oats	do	do	do	0.10	
49	Millet	do	do	do	0.10	
50	Buckwheat	do	do	do	0.10	
	Flour:					
51	Wheat flour of all kinds	do	do	3.50	Free	
52	Rye flour	do	do	3.00	do	
53	Maize flour	do	do	2.00	do	
54	Barley flour	do	do	2.00	do	
55	Millet flour	do	do	2.00	do	
56	Buckwheat flour	do	do	2.00	do	
57	Bran of all kinds of grain	do	do	1.00	do	
58	Farinaceous vegetables, dry, such as peas, kidney beans, beans and lentils and their flour.	do	do	Free	(*)	
59	Farinaceous paste (called Italian), granulated gluten, semolino, and groats.	do	do	do	Free	
60	Bread	do	2.00	2.30	do	
61	Common sea biscuits and cracknels	do	3.00	3.45	do	
62	Rice	do	3.15	3.60	do	
63	Potatoes	do	0.40	0.45	0.05	
64	Chestnuts	do	2.75	3.20	0.25	
65	Chestnut flour	do	Free	Free	Free	
66	Fecula other than those mentioned in the following article	do	2.00	2.30	do	
67	Tapioca, arrow-root, and sago	do	5.00	5.75	do	
68	Salep	do	21.00	24.15	do	12 in cases and barrels; 9 in baskets; 6 in bales.
69	Starch	do	3.40	3.90	do	
	IV.—*Fruits (not exotic), vegetables (not farinaceous), and other vegetable products.*					
70	Grapes	do	3.00	3.45	0.25	
71	All other fresh fruit	do	1.00	1.15	0.10	
72	Prunes	do	3.00	3.45	0.10	
73	All other dried fruit, dried or scalded; walnuts and hazel-nuts	do	3.00	3.45	0.25	
74	Fresh or green vegetables	do	1.00	1.15	0.10	

* Vegetables, 0.25 per 100 kilograms; flour free.

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	IV.—*Fruits, &c.*—Continued.					
			Francs.	*Francs.*	*Francs.*	
75	Dried vegetables	100 kilograms	2.00	2.30	0.10	
76	Living trees, shrubs, and flowers of all kinds, bulbs, and roots of plants	do	1.00	1.15	Free	
77	Hops	do	25.00	28.75	0.90	12 in cases and barrels; 8 in baskets; 4 in bags.
78	Oleaginous seeds of all kinds	do	3.00	3.45	0.20	
79	Aniseseed-seed	do	8.00	9.20	0.40	12 in cases; 2 in bags.
80	Tobacco	do	0.50	0.60	0.50	
81	Garden, forest, and fodder seeds	do	10.00	11.50	2.00	Do.
82	Hay, straw, and fodder plants	do	0.25	0.30	0.10	
	V.—*Exotic fruits and productions.*					
	Sugar:					
83	Refined; in loaves, pounded or in powder; sugar-candy; sugar of fruits, and solution of sugar.	do	20.00	23.00	Free	12 in cases or casks; 4 in bags or bales.
84	Coarse and moist sugar	do	12.00	13.80	do	Do.
85	Sirups and molasses	do	6.00	6.90	do	
86	Raw coffee of all qualities	do	20.00	23.00	do	12 in cases and barrels; 6 in baskets; 2 in bags.
87	Burnt coffee, in berries or ground	do	35.00	40.25	do	
88	Coffee surrogates, including chicory	do	4.00	4.60	do	
89	Cocoa nibs, with or without the husks	do	15.00	17.25	do	
90	Cocoa, pounded or in cakes	do	22.00	25.30	do	Do.
91	Cocoa butter	1 kilogram	0.60	0.70	do	
92	Tea of all qualities	do	0.50	0.60	do	22 in cases and barrels.
93	Black and white pepper, long pepper, pepper roots, pounded pimento ginger.	100 kilograms	15.00	17.25	do	
94	Clove	do	28.00	32.20	Free	
95	Cassia	do	14.00	16.10	do	15 in cases and barrels; 8 in baskets; 2 in bags.
96	Cinnamon and cinnamon flowers	do	48.00	55.20	do	
97	Nutmegs and mace	do	60.00	69.00	do	
98	Saffron	1 kilogram	6.50	7.50	do	
99	Vanilla	do	12.50	14.40	do	
100	Carob-beans, figs in strings, and black raisins, ordinary	100 kilograms	2.00	2.30	do	
101	Oranges, lemons, bitter oranges, citron, pomegranates, figs in boxes, and dried currants.	do	6.00	6.90	do	
102	Almonds in shells, shelled almonds, dates, and sweet pine seeds	do	14.00	16.10	Free	
103	Fresh pine-apples and Malaga raisins	do	24.00	27.60	do	15 in cases or barrels; 8 in baskets; 2 in bags.
104	Pistachio-nuts	do	48.00	55.20	do	
105	Exotic fruits not mentioned	do	12.00	13.80	do	
106	Tobacco in leaf and manufactured, under any form	do	Prohibited		do	

	VI.—*Drinks.*					
	Wines:					
107	Ordinary wine in bottles and casks ..... per cent..	Ad valorem.....	5.50	6.30	Free.....	
108	Fine wines in casks ..... do....	....do	5.50	6.30	....do	
109	Fine wines in bottles ..... do....	....do	5.50	6.30	....do	
	Vinegars:					
110	Vinegar of wine and of wood, in casks	100 kilograms.....	1.50	1.75	....do	
111	Vinegar of wine and of wood, in bottles.....	....do	5.00	5.75	....do	
	Beer:					
112	Beer in bottles and flasks	... do	15.00	17.25	....do	20 in cases; 25 in double cases; 15 in simple cases
113	Beer in casks	....do	8.50	9.80	....do	
114	Cider, hydromel, and other fermented drinks, in casks and bottles..	....do	10.00	11.50	....do	
115	Distilled spirits of all kinds, such as brandy, alcohol, rum, arrack, essence of punch, liquors, and other spirits, sweetened or not.	....do	25.00	28.75	....do	20 in cases; 25 in double casks; 15 in simple casks.
	VII.—*Alimentary preserves and sweets.*					
	Preserves:					
116	Preserved meat, game, fish, lobsters, oysters, and others, in fat, oil, or vinegar.	....do	36.50	42.00	....do	15 in cases and barrels; 8 in baskets and bales.
117	Broth, and extract of meat, in cakes or in any other form.....	1 kilogram.....	0.90	1.05	....do	
118	Truffles, fresh, dried, or salted.....	....do	2.00	2.30	....do	
119	Cucumbers, in barrels, preserved in vinegar or in brine	100 kilograms.....	2.00	2.30	....do	
120	Vegetables or mushrooms, preserved in flasks or in tin boxes.....	....do	20.00	23.00	....do	15 in cases or barrels; 8 in baskets and bales.
121	Olives, salted or in brine, in barrels.....	....do	2.50	2.90	....do	
122	Olives, in bottles, in whatever way preserved	....do	15.00	17.25	....do	15 in cases and barrels; 8 in baskets and bales.
123	Capers, salted or in brine, in barrels	....do	8.00	9.20	....do	16 in cases and barrels.
124	Fine capers, in bottles	....do	28.00	32.20	....do	
125	Powdered mustard and prepared mustard	....do	6.00	6.90	*2.50 / †Free	
126	Pickles of all kinds.....	....do	25.00	28.75	Free.....	16 in cases and barrels; 8 in baskets; 6 in bales.
127	Table sauces (condiments).....	....do	45.00	51.75	....do	
	Sweets:					
128	Fruits preserved in honey, sugar, alcohol, or otherwise, jam and sherbet, fruit-paste, and Turkish Delight.	....do	20.00	23.00	....do	16 in cases and barrels; 8 in baskets; 6 in bales.
129	Opiate	....do	5.00	5.75	....do	16 in cases and barrels; 8 in baskets; 6 in bales.
130	Halva	....do	12.00	13.80	.. do	
131	Spice bread.....	....do	10.00	11.50	....do	
132	Fine pastry.....	....do	16.00	18.40	....do	
133	Chocolate, in packets and in powder.....	....do	20.00	23.00	....do	
134	Sweets, strictly speaking, sirups, orange juice, and other juices of fruits not mentioned.	....do	20.00	23.00	....do	
	VIII.—*Vegetable juices, medical kinds, medicines.*					
	Gums and resins:					
135	Gum mastic	....do	70.00	80.50	....do	12 in cases and barrels; 8 in baskets and bales.
136	Gum arabic.....	....do	16.00	18.40	....do	
137	Ordinary resin (from pine), tar, pitch, and colophony.....	....do	1.50	1.75	0.25	

*Powdered. †Prepared.

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	VIII.—*Vegetable juices, medical kinds, medicines*—Continued.		*Francs.*	*Francs.*	*Francs.*	
	Gums and resins—Continued.					
138	Turpentine, excepting Venetian turpentine	100 kilograms	4.00	4.60	Free	
139	Olibanum (frankincense)	do	6.00	6.90	do	12 in cases and in baskets and bales.
140	Myrrh	do	25.00	28.75	do	
141	Scammony	1 kilogram	2.00	2.30	do	
142	Gums and resins not mentioned, including Venetian turpentine	100 kilograms	18.50	21.30	do	
	Balsams:					
143	Copaiba balsam	do	43.00	49.45	Free	16 in cases and barrels; 9 in baskets; 6 in bales.
144	Natural balsams, not named	1 kilogram	0.80	0.90	do	
	Volatile oils (essences):					
145	Oil of roses	do	80.00	92.00	do	16 in cases and barrels; 9 in baskets; 6 in bales. Nothing is deducted for the flasks.
146	Oil of bitter almonds	do	4.00	4.60	do	
147	Oil of oranges, lemons, and bitter oranges	do	2.50	2.90	do	
148	Volatile oils, not mentioned	do	1.00	1.15	do	
	Different vegetable juices:					
149	Aloes	do	0.10	0.12	do	12 in cases and barrels; 9 in baskets; 6 in bales.
150	Camphor, raw or refined	do	0.16	0.18	do	
151	Manna	do	0.20	0.23	do	
152	Opium	do	4.50	5.20	do	
153	Vegetable juices, not mentioned (dry or liquid), except india-rubber and gutta-percha.	do	0.14	0.16	do	
	Medicinal sorts:					
154	Iris root	do	0.08	0.10	do	12 in cases and barrels; 9 in baskets; 6 in bales.
155	Sarsaparilla root	do	0.25	0.30	do	
156	Jalap root	do	0.25	0.30	do	
157	Rhubarb root	do	0.25	0.30	do	
158	Ipecacuanha root	do	0.80	0.90	do	
159	Medical roots, not mentioned	100 kilograms	8.00	9.20	do	
160	Orange and lemon peel	do	8.00	9.20	do	
161	Medical skins, not mentioned	do	8.00	9.20	do	
162	Senna leaves	do	8.00	9.20	do	
163	Medical leaves and herbs, not named	do	8.00	9.20	do	
164	Medical flowers, not mentioned	do	8.00	9.20	do	
165	Seeds and fruits employed as medicine, not mentioned	do	8.00	9.20	do	
166	Mosses and lichens used as medicine, excepting those used in dyeing	do	8.00	9.20	do	
167	Peruvian bark	1 kilogram	0.20	0.23	do	
168	Orange flowers	do	0.45	0.52	do	
	Cardamom	do	0.60	0.69	do	

177	Musk	... do	14.00	16.10	....do	6 in bales.
	Compound medicines:					
178	Distilled waters (alcoholic or not), medical wines	100 kilograms	30.00	34.50	....do	
179	Sulphate and valerianate of quinine	1 kilogram	10.00	11.50	....do	
180	All pharmaceutical preparations, and all compound medicines not mentioned; also medical preparations in powders, pills, tablets, pastils, elixirs, sirrups, ointments, oils, soap, plasters, or in any other form, liquid or solid, excepting medical wines and salts for baths.	....do	1.00	1.15	Free	12 in cases or barrels; 9 in baskets; 6 in bales.
181	Salts for baths from mineral waters, natural and artificial	100 kilograms	3.50	4.05	....do	
182	Pharmaceutical preparations for baths (in salts)	....do	56.00	64.40	....do	12 in cases and barrels; 9 in baskets; 6 in bales.
183	Mineral waters, natural and artificial, in bottles and pitchers	....do	1.00	1.15	....do	
	IX.—*Perfumery.*					
184	Odoriferous waters, alcoholic or not, and toilet waters in general, tooth-water-handkerchief-scent, scents for perfuming, in all shapes and of all kinds.	Ad valorem	7 per cent.	8.05 p. ct.	....do	
185	Scented vinegars	100 kilograms	50.00	57.50	....do	12 in cases and barrels; 9 in baskets; 6 in bales.
186	Eau-de-cologne	... do	50.00	57.50	... do	
187	Toilet soap, liquid, in powder or in cakes	Ad valorem	7 per cent.	8.05 p. ct.	....do	
188	Pastes, liquid or in cakes (almond paste and others)	100 kilograms	48.00	55.20	....do	12 in cases and barrels; 9 in baskets; 6 in bales.
189	Pomades of all kinds (for the hair and for the skin), perfumed oil, paints and dyes for the hair.	Ad valorem	7 per cent.	8.05 p. ct.	....do	
190	Rice powder, not scented	100 kilograms	6.00	6.90	....do	
191	Scented power of all kinds, especially tooth-powder and opiates	... do	50.00	57.50	....do	12 in cases and barrels; 9 in baskets; 6 in bales.
	X.—*Chemical matters and products.*					
192	Chlorhydric or muriatic acid	100 kilograms	Free	Free	....do	
193	Sulphuric acid (vitriol)	....do	....do	....do	....do	
194	Oxide of iron	....do	....do	....do	....do	
195	Carbonate of baryta, raw nitrate of soda, sulphate of baryta, sulphate of iron (green vitriol, green copperas), sulphate of magnesia, (bitter salts, epsom salts, seidlitz salts), sulphate of soda (glauber's salt).	....do	....do	....do	....do	
196	Sulphur in cakes, lumps, sticks, and powder (flower of sulphur)	....do	....do	....do	....do	
197	Aqua regia (chloric and nitric acids mixed), arsenious acid, gallic acid, caustic soda, carbonate of soda, bicarbonate of soda, refined nitrate of soda (cubic niter, chilian niter, natron saltpeter), sulphate and hyposulphite of soda; silicate of soda; sulphate of zinc (white copperas, zinc vitriol,) alum, chloride of potassium, chloride of lime.	....do	....do	....do	....do	

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	X.—*Chemical matters and products*—Continued.		*Francs.*	*Francs.*	*Francs.*	
198	Nitric acid, potash, oxide of lead (minium and menige), oxide of zinc; mixture of zinc and oxide of zinc (tutty), carbonate of potash, potash, carbonate of lead (ceruse, white-lead), saltpeter (nitrate of potash), sulphate of potash; sulphate of copper (blue vitriol), sulphuret of arsenic (realgar and orpiment), sulphuret and protosulphuret of antimony (antimonium crudum), acetate of iron, acetate of soda, sulphuret of carbon, acetate and sub-acetate of lead (sugar of lead), acetate of calcium.	100 kilograms.....	Free.....	Free.....	Free.....	
199	Chloride of ammonium (sal ammoniac), sulphate and carbonate of ammonia, carbonate, and arsenate of potash.	....do	..do	..do	..do	
200	Raw tartar, chromate of potash, red and yellow chromate of lead	....do	..do	..do	..do	
201	Boric acid, oxalic acid, liquid phenic acid, borax, bioxalate of potash, refined tartars, citate of calcium, acetate of copper, chlorate of potash, oxide of tin, cyanuret of potassium, nitrate of silver (lunar caustic).	....do	..do	..do	..do	
202	Phosphorus	....do	....do	....do	....do	
203	Bromine	....do	....do	....do	....do	
204	Iodine	....do	....do	....do	....do	
205	Tartaric acid	....do	....do	....do	....do	
206	Crystallized phenic acid	....do	....do	....do	....do	
207	Citric acid	....do	....do	....do	....do	
208	Benzoic acid	....do	....do	....do	....do	
209	Oxide of copper	....do	....do	....do	....do	
210	Oxide of cobalt	....do	....do	....do	....do	
211	Cinnaber (vermilion)	....do	....do	....do	....do	
212	Iodide of potassium	....do	....do	....do	....do	
213	Combinations of cobalt (excepting oxide of cobalt)	....do	....do	....do	....do	
214	Ether, spirit of amyle, pyroxylic spirit, glycerine	....do	....do	....do	....do	
215	Javelle and Labarac water	...do	....do	....do	....do	
216	Chemical productions not mentioned, even when derived from petroleum or coal, necessary for manufacturers.	....do	....do	....do	....do	
217	Other chemical productions not mentioned, even when derived from petroleum or coal, per cent.	ad valorem	7	8.05	....do	
218	Natural phosphates and other chemical agricultural aids.....per cent..	....do	7	8.05	....do	
	XI.—*Dyeing and tanning matters, colors, and lackers.*					
219	Quercitron and other dye-woods, raw or pulverized	100 kilograms	Free.....	Free.....	....do	
220	Weld (wood)	....do	..do	....do		0.50

224	Curcuma, in roots and powdered	do	do	do	0.50	
225	Alkanet	do	do	do	0.50	
226	Archil and other dyeing lichens	do	do	do	0.50	
227	Madder, in roots and powder	do	do	do	0.50	
228	Buckthorn	do	do	do	0.50	
229	Flower of carthamus	do	do	do	1.50	
230	Dyeing matters, not mentioned	do	do	do	0.50	
231	Sumach in all shapes	do	1.60	1.85	0.50	
232	Oak and birch bark, ground or not, and tanning barks not named	do	Free	0.80	0.10	
233	Myrobolans	do	3.20	3.70	Free	
234	Nut-gall, broken or not	do	12.00	13.80	do	12 in cases and barrels.
235	Valonia	do	4.00	4.60	do	
236	Catechut	do	0.50	0.60	do	
237	Tannins not mentioned	do	2.00	2.30	0.10	
238	Extract of madder	do	22.50	25.90	Free	Do.
239	Extracts of dyeing woods	do	12.00	13.80	do	
240	Prepared pastel	do	4.50	5.20	do	
241	Prepared archil	do	7.35	8.45	do	
242	Cudbear	do	20.00	23.00	do	Do.
243	Rocou	do	20.00	23.00	do	
244	Raw cochineal	do	Free	Free	do	
245	Animal kermes, in grains	do	35.00	40.25	do	Do.
246	Animal kermes, in pastel or powder	do	60.00	69.00	do	
247	Lack-lack and lack-dye	do	35.00	40.25	do	
248	Ordinary carmine	do	60.00	69.00	do	
249	Indigo	do	125.00	143.75	do	
250	Blue for washing, in balls and in sheets	do	12.00	13.80	do	Do,
251	Ultramarine, natural and artificial	do	11.00	12.65	do	20 in cases and barrels; 9 in baskets; 6 in bales.
252	Prussian blue	do	17.00	19.55	do	
253	Crystallized prussiate of potash, yellow and red	do	25.00	28.75	do	
254	Blue and green ashes	do	14.70	16.90	do	
255	Ivory black	do	12.00	13.80	do	
256	Bone black, and others	do	2.60	3.00	do	
257	Mineral black (cologne earth)	do	2.00	2.30	do	
258	Lamp black	do	5.00	5.75	do	
259	Dutch pink	do	5.00	5.75	do	
260	Writing and printing ink	do	6.00	6.90	do	
261	Indian ink	do	60.00	69.00	do	
262	Varnish of all kinds, fat, in spirit or in essence	do	22.00	25.30	do	Do.
263	Boot blacking	do	3.00	3.45	do	
264	Colors derived from tar	do	60.00	69.00	do	20 in cases; 9 in basktse; 6 in bales.
265	Extracts of tanning matters (fuchsine, aniline, &c.) Per cent.	Ad valorem	7	8.05	do	
266	Prepared colors, liquid, powdered, in cakes, in bladders, shells, bottles, or boxes, with or without their accessories.	100 kilograms, B	60.00	69.00	do	
267	Unprepared colors not mentioned, ordinary ground oil colors serving for constructions, buildings, &c., contained in vessels larger than those mentioned in article 266.	100 kilograms	16.00	27.60	do	20 in cases and barrels; 9 in baskets; 6 in bales.
268	Simple pencils (without cases), black or colored	do	16.00	18.40	do	

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XI.—*Dyeing and tanning matters, colors, and lackers*—Continued.		*Francs.*	*Francs.*	*Francs.*	
269	Compound pencils, black or colored, with or without cases, of ordinary, fine, or varnished wood.	1 kilogram	0.60	0.69	Free	20 in cases and barrels; 9 in baskets; 6 in bales.
270	Colored sand for writing	100 kilograms	3.50	4.05	do	
	XII.—*Oils, fats, wax, and their products.*					
	Oil:					
271	Comestible olive oil of all kinds	do	12.00	13.80	do	20 in any vessel.
272	Vegetable oils for manufactures, colza, linseed oil, and vegetable oils, excepting those specially mentioned, and volatile oils.*	do	7.00	8.05	do	
273	Sweet almond oil	do	10.00	11.50	do	20 in cases and baskets and barrels.
	Fats:					
274	Fat of fishes	do	6.00	6.90	1.00	
275	Suet and its products (stearine, oleine, &c.) and in general all the raw materials destined for the manufacture of stearine candles, and of soap. Also, the raw materials and the accessory products necessary for the manufacture of stearine candles and of soap are free from import duties.	do	Free	Free	1.00	
276	Suets and fats of all kinds used in other industries	do	6.00	6.90	1.00	
277	Prepared greases for wheels and machines	do	3.50	4.00	Free	
278	Spermaceti destined for other uses than the manufacture of candles.	do	24.50	28.20	do	12 in cases, barrels, and baskets.
279	Stearine, in lumps, destined for other uses than the manufacture of candles.	do	14.00	16.10	do	
	Wax:					
280	Raw, white or yellow, of all kinds	do	45.00	51.75	†4.00 ‡5.00	12 in cases and in barrels.
281	Worked, white or yellow, such as tapers, figures, flowers, or other preparations of any kind.	do	55.00	63.25	Free	Do.
282	Candles	do	8.00	9.20	do	
283	Soap of all kinds, excepting perfumed soap	do	15.00	17.25	do	
284	Stearine and spermaceti candles of all kinds	do	25.00	28.75	do	
	XIII.—*Waste and different animal products.*					
285	Bones and hoofs	do	1.00	1.15	0.20	
286	Horns of cattle, rough	do	5.00	5.75	0.50	
287	Horns of cattle, prepared	do	15.50	17.85	Free	
288	Stag horns	do	15.00	17.25	1.80	
289	Tails of cattle	100 pieces	0.65	0.75	0.10	

290	Bladders	100 kilograms	10.00	11.50	1.00	
291	Intestines of cattle	do	3.50	4.00	0.25	
292	Bulls' sinews	do	2.50	2.90	0.25	
293	Bulls' gall	do	6.00	6.90	0.50	
294	Coagulated blood	do	1.20	1.40	0.10	
295	Rennet	do	10.00	11.50	Free	
296	Skin dubbings	do	7.00	8.05	do	
297	Scourings of hides	do	1.00	1.15	do	
298	Pigs' bristles, raw	do	40.00	46.00	4.00	
299	Pigs' bristles, cleaned and carded	do	65.00	74.75	8.00	
300	Raw hair (in masses, not separated)	1 kilogram	5.00	5.75	Free	
301	Prepared hair, up to 50 centimeters, inclusively, in length	do	11.00	12.65	do	
302	Prepared hair, more than 50 centimeters in length	do	32.00	36.80	do	
	Feathers:					
303	Cocks' and eagles' feathers of their natural color ..... per cent	Ad valorem	7	8.05	do	
304	All other feathers for ornament, of all natural colors .... per cent	do	7	8.05	Free	
305	Writing quills, prepared or not	1 kilogram	0.50	0.58	0.10	18 in cases and barrels.
306	Feathers for bedding	do	0.30	0.35	0.06	
307	Down	do	0.85	0.98	0.10	
308	Elephant tusks, entire or in pieces	do	1.75	2.00	Free	Will be withdrawn from the wooden envelopes, and will be weighed with the boxes.
309	Tortoise shells	do	4.50	5.20	do	
310	Whalebone, raw	do	0.80	0.92	do	
311	Ordinary sponges	do	0.80	0.92	do	
312	Fine sponges	do	2.60	3.00	do	
313	Waste of sponges	do	0.15	0.17	do	
314	Ants' eggs	do	0.70	0.80	do	
315	Silkworms' eggs	do	20.00	23.00	do	
	XIV.—*Skins and furs, saddlery, different objects of skin and of leather, boots and shoes; fresh, dried, or salted skins.*					
316	Raw skins	100 kilograms	ree		1.00	
	(Skins of horned cattle—ox, cow, buffalo bull—of horses, pigs, dogs, fresh, dried, or salted, may be subjected to a duty on exportation of 1.50 francs per 100 kilograms.)					
	Leather (tanned skins):					
317	Ordinary leather, not specially mentioned	do	40.00	46.00	Free	16 in cases, 12 in baskets, 6 in bales.
318	Fine leather, such as dyed, excepting leathers simply blacked, pressed, varnished, gilded, or silvered, as well as tawed, and chamois leather, glove leather, morocco, Spanish leather, and beaver skins.	do	70.00	80.50	do	
319	Pieces of skins prepared, of all kinds	do	5.00	5.75	do	
320	Furs, viz, all skins with one side entirely or half prepared, but with the hair on the other side, not otherwise prepared.	do	60.00	69.00	do	10 in barrels, 9 in baskets, 6 in bales.
	Furrier's work:					
321	Raw (*i. e.*, 1st, all works, in furs only, not united with other products, such as rugs not lined, furs for linings, trimmings, &c., 2d, Angora and sheep furs, bleached and dyed, not lined), and made-up sheep furs not covered with stuff.	do	55.00	63.25	do	10 in cases and barrels, 9 in baskets, 8 in bales.

*Articles of this category destined for the manufacture of stearine candles and soap are free, as also the products necessary for this manufacture.

† Yellow. ‡ White.

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XIV.—*Skins and furs, saddlery, &c.*—Continued.					
	Furrier's work—Continued:		*Francs.*	*Francs.*	*Francs.*	
322	Made-up furs, *i. e.*, all furs made up not specially mentioned, such as pelisses, muffs, caps, gloves, and lined rugs.	100 kilograms.....	140.00	161.00	Free.....	10 in cases and barrels, 9 in baskets, 8 in bales.
	Objects of leather:					
323	Ordinary, such as shoemaker's, saddler's, harnessmaker's, and portmanteaumaker's work, in ordinary leather, even combined with other materials excepting those enumerated in article 445.	....do	45.00	51.75	... do	16 in cases; 12 in baskets; 6 in bales.
324	Fine (excepting gloves), viz, those enumerated in the preceding article, even combined with other materials, excepting those enumerated in article 445.	....do	90.00	103.50	....do	Do.
325	Wooden boxes covered with thick tissues, even combined with common metals.	....do	21.00	24.15	....do	
326	Different objects for traveling, camping, hunting, and other portmanteaumaker's and harnessmaker's articles, of thick tissues, waxed or not, combined with leather, wood, or common metals.	... do	45.00	51.75	....do	
327	Leather gloves of all kinds .....per cent..	Ad valorem.....	7	8.05	... do	
328	Boots, shoes, and slippers, of all kinds of material	100 kilograms.....	90.00	103.50	....do	15 in cases and in barrels; 11 in baskets; 5 in bales.
	XV.—*India rubber and gutta-percha and their manufactures.*					
329	India rubber, raw or melted, in lumps or in sheets, elastic threads not covered with other material.	....do	30.00	34.50	....do	15 in cases and barrels; 10 in baskets; 5 in bales.
	India rubber objects:					
330	Ordinary, such as India rubber articles not varnished, not dyed, not printed, even combined with other materials excepting those named in article 445. (Gutta-percha objects are treated the same as India rubber objects. Surgical instruments of India rubber are free.)	....do	45.00	51.75	....do	16 in cases; 12 in baskets; 6 in bales.
331	Fine, such as India rubber objects varnished, dyed, printed, even combined with other materials, excepting those mentioned in article 445.	....do	90.00	103.50	....do	
	Covered elastic:					
332	Elastic covered with cotton, wool, or other textile materials, excepting silk and elastic stuffs of the same kind.	....do	50.00	57.50	....do	15 in cases and in barrels; 11 in baskets; 5 in bales.
333	Elastic covered with silk and with elastic silk stuffs.....	....do	100.00	115.00	....do	

337	Woolen yarns of all kinds	....do	70.00	80.50	....do	15 in cases and barrels; 11 in baskets; 6 in bales.
	Woolen tissues:					
338	Ordinary, viz, rough blankets with long hairs, rough cloth, woolen carpets in the piece or by the meter. (Stuffs of wool or of cotton mixed with any other product than silk pay the duty of woolen or cotton tissues, according to whether the predominant material is wool or cotton. Ordinary stuffs called "oziak" are also included in this category.)	....do	30.00	34.50	....do	15 in cases; 6 in bales.
339	Cloths and other analagous tissues, not printed, flannel of all kinds, white or colored, Turkish caps or "fez," and "moultons." (All the fashionable stuffs for men's clothing, such as are manufactured at Brünn and Reichenberg, are included under "tissues analagous to cloths.")	....do	58.00	66.70	....do	Do.
340	All other woolen tissues not included in the above articles, excepting shawls and laces; also all woolen hosier's and haberdasher's goods. (Are included also in this category the woolen stuffs called, tibets, merino lastings, Scotch cashmire, orleans, barege, lastings, reps (stuff for furniture), mousselines, gros-grains, damask plush, velvet, &c.)	....do	90.00	103.50	....do	
341	Woolen hosiery articles, of all kinds, even trimmed with other tissues.	....do	150.00	172.50	... do	Do.
342	Knitted and worked shawls (imitation of Indian and Turkish shawls)	....do	160.00	184.00	....do	
343	Indian and Turkish shawls	per cent	Ad valorem	5	5.75	....do
344	Woolen lace	do	....do	7	8.05	....do
345	Felt, of all kinds; also the following felt articles: Soles, boots and shoes (even with leather soles) with or without soles, and felt hats for soldiers and peasants (including Kronstadt caps, made of sheep's wool).	100 kilograms	20.00	28.75	....do	15 in cases and barrels; 9 in baskets; 6 in bales.
346	Felt objects other than those mentioned in the preceding article, including felt hats, mounted but not trimmed.	....do	175.00	201.25	... do	
347	Raw horse-hair, prepared or frizzed	....do	26.00	29.90	2.50	
348	All other hair	....do	3.00	3.45	0.70	
	Hair threads:					
349	Thread of goat's hair	....do	140.00	161.00	Free	
350	Thread of ox's, cow's, and other common hair	....do	14.00	16.10	....do	
	Knitted tissues of hair:					
351	Blankets, carpets, and palliasses, friction cloths, sackcloth, girths, and other ordinary hair tissues.	.. do	25.00	28.75	....do	15 in cases and barrels; 13 in baskets; 6 in bales.
352	Other tissues and knitting of any hair	... do	80.00	92.00	....do	
353	Horse-hair hats, mounted or not, but not trimmed	Each	0.28	0.32	....do	
354	Horse-hair lace trimmings	100 kilograms	150.00	172.50	....do	Do.
	Silks:					
355	Silkworms' cocoons	....do	35.00	40.25	0.05	
356	Raw silk	1 kilogram	4.50	5.20	0.25	
357	Milled silk	.. do	5.00	5.75	Free	
358	Bourre de soie, not dyed, milled or not	100 kilograms	112.00	128.80	0.10	

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XVI.—*Textile materials*—Continued.		*Francs.*	*Francs.*	*Francs.*	
	Silk threads:					
359	Silk threads of all colors, simple or twisted	1 kilogram	5.50	6.32	Free	16 in cases and barrels; 11 in baskets; 7 in bales.
	Silk tissues and knitting:					
360	Unbleached foulards, colored or printed, lustring, Florence, marceline.	100 kilograms	560.00	644.00	do	22 in cases and barrels; 18 in baskets; 13 in bales.
361	Silk stuffs, plain, other than those belonging to the preceding article, and velvet, per cent.	Ad valorem	7	8.05	do	
362	Silk stuffs, worked (excepting velvet), and crapes, plain, per cent.	do	7	8.05	do	
363	Silk stuffs, broché in silk, crapes embroidered and worked, silk gauze of pure silk or mixed with thread, per cent.	do	7	8.05	do	
364	Pure silk velvet, plain or worked, per cent	do	7	8.05	do	
365	Pure silk ribbon, plain, other than velvet ribbon do	do	7	8.05	do	
366	Pure silk ribbon, worked, other than velvet ribbon do	do	7	8.05	do	
367	Velvet ribbon, plain or worked do	do	7	8.05	do	
368	Silk tulle	100 kilograms	750.00	862.50	do	22 in cases and barrels; 18 in baskets, 13 in bales; 5 per cent. of the gross weight of the cardboard will also be deducted.
369	Silk lace (blond) do	Ad valorem	5	5.75	do	
370	Silk knitting (hosiery) do	do	7	8.05	do	
371	Lacemen's articles of pure silk do	do	7	8.05	do	
372	Silk rugs	100 kilograms	315.00	363.25	do	22 in cases and barrels; 18 in baskets, 13 in bales.
	Cotton:					
373	Raw cotton and cotton waste	do	15.00	17.25	do	
374	Carded or combed cotton	do	25.00	28.75	do	
375	Wadding and cotton lint	do	15.00	17.25	do	15 in cases and barrels; 6 in bales and baskets.
	Cotton thread:					
376	Simple cotton, bleached or unbleached, carded, called in Roumania *crez, crezisor, extra crez.*	do	15.00	24.15	do	
377	Twisted cotton of two or several threads, bleached or not	do	20.00	35.65	do	Do.
378	Cotton (twisted or simple)	do	46.50	53.50	do	
	Cotton tissues:					
379	Ordinary, such as unbleached, undyed, unprepared, unworked, woven wicks, nets, and girths.	do	20.00	23.00	do	
380	Half fine, such as prepared, bleached, dyed (excepting prints) worked or not.	do	25.00	28.75	do	
381	Fine, such as prints, glossed tissues	do	45.00	51.75	do	15 in cases; 6 in bales.

383	Gimp, buttons, ribbons, and trimmings	do	80.00	92.00	do	
384	Cotton hosiery of all kinds, even trimmed with other tissues	do	150.00	172.50	do	
385	Cotton lace	per cent.	Ad valorem	5	5.75	do
	Hemp, flax, jute and other vegetable textiles:					
386	Hemp and flax, green, dried, or macerated, but not stripped; jute, abaca, New Zealand flax, and other filamentous vegetables, raw or combed.	100 kilograms	1.25	1.45	0.10	
387	Hemp and flax, stripped, combed or not; hemp and flax tow	do	9.00	10.35	0.45	
	Hemp and other vegetable textiles:					
388	Flax and hemp yarns, simple, unbleached, bleached or dyed, per cent.	Ad valorem	7	8.05	Free	
389	Twisted flax or hemp yarns, bleached, unbleached, or dyed in any color, per cent.	do	7	8.05	do	
390	Yarns of jute, abacca, New Zealand flax, aloes, and other similar textiles, unbleached.	100 kilograms	5.00	5.75	do	
391	Yarns of jute, abacca, New Zealand flax, aloes, and other similar textiles, bleached or dyed.	do	10.00	11.50	do	13 in cases and barrels; 5 in bales and baskets.
392	Rope and cord of hemp, jute, abacca, New Zealand flax, aloes, and other similar textiles, of any thickness, bleached, unbleached, or tarred, ropes for stables and harness.	do	9.00	10.35	do	
393	String of any thickness, bleached, unbleached, or dyed, in packets, bridles, halters, and girths of hemp, fishing-nets of all kinds.	do	18.00	20.70	do	13 in cases and basrels; 9 in baskets, 6 in bales.
394	Lime-bark peeled for cordage and cordage of lime-bark	do	4.00	4.60	do	
	Tissues and knitting of flax, hemp, jute, and other filamentous vegetables:					
395	(a) Jute tissues,† very ordinary, bleached or unbleached	do	5.00	11.50	do	13 in cases, barrels, and baskets; 6 in bales.
	(b) Unbleached cloths, very ordinary	do	10.00	11.50	do	
396	Unbleached cloth, compact and thick; twilled stuff for bedding and furniture, even bleached, cloth woven in colors (striped, &c.), unbleached ticking.	do	30.00	34.50	do	Do.
397	Ticking for clothing, bleached or colored	do	50.00	57.50	do	
398	Unbleached smooth cloth of all qualities (excepting those enumerated in articles 395, 396).	do	45.00	63.25	do	
399	Plain linen cloth, called Holland, bleached, containing less than 8 woof threads in each 5 millimeters.	do	31.00	35.65	do	1 in cases, barrels, and baskets; 6 in bales.
400	Plain bleached Holland having from 8 to 11 (inclusive) woof threads in each 5 millimeters.	do	49.00	56.35	do	
401	Plain bleached Holland having from 12 to 19 (inclusive) woof threads in each 5 millimeters.	Ad valorem	7 per cent.	8.05 p. c.	do	
402	Plain bleached Holland having 20 or more woof threads in each 5 millimeters.	do	7 per cent.	8.05 p. c.	do	
403	Dyed plain Holland, of any quality	100 kilograms	40.00	46.00	do	Do.
404	Printed Holland, of any quality; linen handkerchiefs with printed pictures, in bands containing several handkerchiefs or by the dozen, hemmed or not.	do	125.00	143.75	do	
405	Table and toilet linen, bleached or unbleached, striped or damask	Ad valorem	7 per cent.	8.05 p. c.	do	

* Stuffs of wool and cotton, mixed with any other product than silk pay the duty of woolen or cotton tissues according to whether the predominant material is cotton or wool, and following the distinctions established for each article.

† Pure jute carpets are treated as jute tissues, *i. e.*, they are submitted to a tax of 5 francs per 100 kilograms.

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XVI.—*Textile materials*—Continued.					
	Tissues and knitting of flax, hemp, jute, and other filamentous vegetables—Continued.		*Francs.*	*Francs.*	*Francs.*	
406	Cambric and lawn, and cambric and lawn handkerchiefs, by the dozen, even embroidered, but without lace.	100 kilograms.....	245.00	281.75	Free.....	1 in cases, barrels, and baskets; 6 in bales.
407	Thread, knitting, of all kinds and of all qualities.....	....do.....	150.00	172.50	....do.....	
408	Laceman's work and tape, unbleached, bleached, or dyed.....	....do.....	100.00	115.00	....do.....	
409	Tulle and thread lace.....	Ad valorem.....	5 per cent.	5.75 p. c.	....do.....	
410	Carpets of flax, hemp, and cotton, pure or mixed with other materials, excepting silk; jute carpets and carpets of other vegetable textiles mixed with other materials excepting silk. (For carpets of pure jute, *vide* jute tissues.)	100 kilograms....	30.00	34.50	....do.....	15 in cases and barrels; 13 in baskets; 6 in bales.
	Tissues mixed with silk:					
411	Woolen stuffs mixed with silk, or with silk and linen or cotton, the silk serving in any case to represent only a design or ornament, unless the mixture of silk be less than 10 per cent., in which case the stuffs are treated as purely woolen stuffs.	....do.....	135.00	155.25	....do.....	Do.
412	Silk stuffs mixed with other products, excepting gold and silver, fine or false.	Ad valorem.....	7 per cent.	8.05 p. c.	....do.....	
413	Ribbons of silk mixed with other products, simple or worked, and also with velvet.	...do.....	7 per cent.	8.05 p. c.	....do.....	
414	Silk stuffs mixed with false gold or silver, or embroidered with false gold or silver.	....do.....	7 per cent.	8.05 p. c.	....do.....	
415	Silk stuffs mixed with fine gold or silver, or embroidered with gold or silver.	....do.....	7 per cent.	8.05 p. c.	....do.....	
416	Silk gauze mixed with gold or silver fine or false.....	....do.....	7 per cent.	8.05 p. c.	....do....	
417	Trimmings and woolen tape, mixed with other products and even with a little silk.	....do.....	7 per cent.	8.05 p. c.	....do.....	
418	Trimmings of silk, mixed with other products, except gold or silver.	....do.....	7 per cent.	8.05 p. c.	...do.....	
419	Trimmings of fine or false gold or silver.....	....do.....	7 per cent.	8.05 p. c.	....do....	
420	Lace of fine or false gold or silver.....	....do.....	7 per cent.	8.05 p. c.	....do....	
	Tissues, waxed or tarred:					
421	Waxed silk taffeta.....	100 kilograms.....	140.00	161.00	....do.....	12 in cases and barrels; 9 in baskets; 6 in bales.
422	Oil-cloth and tarred-cloth, thick, such as for packing, for covering goods, packages, &c.	....do.....	15.30	17.60	....do.....	
423	Fine oil-cloth for different uses, simply dyed or with designs, by the meter and by the piece.	....do.....	40.00	46.00	....do.....	
424	Tarred felt and felt covered with asphalt, for lining ships, for roofs, and other uses.	...do.....	7.50	8.62	....do.....	
425	Ready-made clothes and linen.....	Ad valorem.....	7 per cent.	8.05 p. c.	....do.....	

428	Men's silk hats, opera hats of all stuffs, hats of lacquered card-board, caps, and other men's head-dress of all stuffs.	1 kilogram	3.50	4.02	....do	
429	Hats and caps of cane, rush, palm-leaves, shavings, and other fibrous matters, untrimmed, excepting liber and straw hats and bonnets.	100 kilograms	36.00	41.40	....do	12 in cases, barrels, and baskets; 4 in bales.
430	Liber and straw hats and bonnets, untrimmed, and hats and bonnets, woven or plaited with silk thread, or other tissues, and with horse hair.	....do	362.00	416.30	....do	
431	Military head-dress, such as schakos, kepis, and other similar, of cloth or other stuffs, with or without ornaments or distinctive signs in metal or other material.	Ad valorem	7 per cent.	8.05 p. c.	....do	
	Flexible plants, branches, and barks:					
432	Reeds	100 sheaves	0.65	0.75	0.05	
433	Wicker for plaiting (red willow)	....do	2.80	3.22	0.10	
434	Ordinary cane	....do	0.40	0.46	0.05	
435	Rattan	100 kilograms	7.00	8.05	....do	
436	Stretched rattan	....do	10.00	11.50	....do	
437	Exotic canes	....do	12.00	13.80	....do	
	Objects of liber, cane cocoa fibers, graminaceous plants, splinters and shavings, cane for furniture (rattan), and straw:					
438	Quite ordinary, *i. e.*, foot-mats and hassocks of liber, cane, cocoa fibres, graminaceous plants, also of sea-weeds, reeds, straw, not dyed; also brushes and brooms of cane, graminaceous plants, reeds, heather roots or rice straw.	....do	2.00	2.30	....do	
439	Common, *i. e.*, foot-mats and hassocks of liber, cane, cocoa fibers, graminaceous plants, sea-weeds, reeds, and straw, dyed, then objects for domestic use, such as dishes, plates, baskets and the like; cane for furniture (rattan) split, sized or dyed; all these objects even in combination with wood not sized, not dyed, unpolished, and unvarnished.	....do	9.50	10.95	....do	
440	Half fine, *i. e.*, plaited, even rugs and carpets, so long as they are not included in arts. 438 and 439.	....do	35.00	40.25	....do	20 in cases and barrels; 14 in baskets; 9 in bales.
441	Fine, *i. e.*, objects plaited or woven with silk threads or other tissues or with hair (esparto goods).	....do	350.00	402.50	....do	
	XVII. *Paper, cardboard and their manufactures.*					
	Paper and stationery:					
442	Ordinary, *i. e.* gray paper or other for packing, simple or tarred, ordinary cardboard, emery paper and the like.	....do	8.00	9.20	....do	16 in cases; 6 in bales.
443	Paper not specially mentioned	....do	19.00	21.85	....do	
444	Wall-paper of all kinds	....do	40.00	46.00	....do	
445	Papiers de luxe, *i. e.*, gilded or silvered paper, paper with ornaments in relief; letter-paper with monograms or designs and with corresponding envelopes, Chinese paper; as also objects simply of paper or combined with other matters excepting precious metals, fine or half-fine stones, corals, fine pearls, amber, jet and shell.	....do	60.00	69.00	....do	16 in cases; 6 in bales.

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XVII.—*Paper, cardboard, and their manufacture*—Continued.		*Francs.*	*Francs.*	*Francs.*	
	Paper and stationery—Contiued.					
446	Tickets, accounts, invoices, bills of exchange, waybills and the like, visiting cards and the like, calendars for walls, even gummed on pasteboard, calendars called "American," all the foregoing printed, engraved, or colored.	Ad val.....	7 per cent.	8.05	Free.....	
447	Glossed card-board, card-board of sheets of paper stuck together, card-board prepared for painters.	....do	7 per cent.	8.05	....do	
448	Objects made of papier-maché and pasteboard, only varnished or lacquered neither gilded nor silvered, and not mixed with products other than wood and ordinary metals (the last not gilded or silvered).	100 kilograms	28.00	32.20	... do	16 in cases and barrels; 12 in baskets; 6 in bales.
449	Card-board boxes with drawers or lids simply covered with paper, even colored or gilded, or silvered, even with tickets, and used chiefly in chemists' shops.	....do	25.00	28.75	....do	
450	All other card-board objects, cut and glued, united or not to wood and glass, covered with all kinds of paper, with or without ornaments of paper or ordinary metals, even silvered or gilded.	....do	60.00	69.00	... do	
451	Playing cards of any quality.....	ad val.....	7 per cent.	8.05	....do	
	Literary, scientific, and artistic works:					
452	Books in general, cartographic works in loose sheets or in atlases, engravings, lithographs, and photographs in loose sheets or in albums, musical works engraved, lithographed, or printed with movable type.	.....	Free.....	Free	....do	
	XVIII.—*Wood and industries derived therefrom.*					
	Firewood and charcoal:					
453	Firewood.....	Stére	0.50	0.58	Willow 0.05, the stére 0.20 per 100 kilograms. Firewood 0.10 the stére; 0.25 per 100 kilograms.	

454	Charcoal	100 kilograms	0.45	0.52	Free	
	Buing ildand working wood:					
455	Building timber		Free	Free	do	
456	Exotic woods, not odoriferous, in trunks or sawn, of any thickness, excepting sheets for veneering.	do	3.50	4.00	do	
457	Raw cork	do	4.00	4.60	do	
458	Odoriferous woods	do	15.00	17.25	do	
	Objects of wood:					
459	Quite ordinary, such as coopers' joiners', turners' works, coarse, rough, wheelwrights' work and other wooden objects simply planed or hewn; basket trade works, all these articles neither painted nor sized, nor polished, nor combined with other materials.	do	2.00	2.30	do	
460	Ordinary, such as wood sawn in sheets for veneering; flooring not inlaid; cork in sheets, soles, and corks; all these articles rough.	do	5.00	5.75	do	
461	Fine, such as household utensils (furniture), inlaid flooring; also all the articles mentioned in Articles 459 and 460, painted, sized, lacquered, varnished, with common metals, with ordinary leather, with cane, rushes, and other vegetable fibrous materials.	do	9.00	10.35	do	16 in cases and barrels, 9 in bales.
462	Extra fine, such as wooden objects inlaid, incrusted; turners' and basket-makers' fine objects, in gilded wood, black forest clocks, sheets for veneering in inlaid work, and in general all the articles not mentioned under 459, 460, 461, even combined with other materials, excepting those mentioned in Article 445; lastly, all stuffed furniture, covered or not.	do	50.00	57.50	do	
	XIX.—*Combustible minerals, bitumen, &c.*					
463	Coal, lignite, &c		Free	Free	Free	
464	Asphalt	100 kilograms	1.75	2.00	do	
465	Petroleum and schist oil, crude	do	Free	5.00	do	
	Petroleum and schist oil, refined	do	do	30.00	do	
466	Bitumen fluids not mentioned	do	0.60	0.70	do	
467	Ozocerite, raw	do	4.00	4.60	do	
468	Bitumen mastics	do	1.12	1.30	do	
469	Coal-tar	do	0.50	0.60	do	
470	Paraffine and ceresine candles, and other objects of paraffine and ceresine.	do	13.00	14.95	do	12 in cases and barrels; 9 in baskets; 6 in bales.
471	Paraffine and ceresine for manufacturing stearine candles		Free	Free	do	
472	Graphite or plumbago	100 kilograms	3.00	3.45	do	
	XX.—*Mineral substances, pottery, and glassware.*					
	Precious stones:					
473	Diamond, sapphire, emerald, ruby, fine pearls, spinal ruby, topaz, opal, hyacinth, turquoise, amethyst, garnet, coral, and other precious stones and gems not mentioned.	100 grams	4.00	4.600	Free	
	Valuable hard stones:					
474	Rock-crystal, agate, onyx, jasper, tourmaline, lapis-lasuli, jet, malachite, and others not mentioned, in the rough.	1 kilogram	20.00	24.50	do	

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XX.—*Mineral substances, pottery, and glassware*—Continued.		*Francs.*	*Francs.*	*Francs.*	
	Valuable hard stones—Continued.					
475	The stones mentioned in the previous article, polished, engraved, or worked, united, or not, to other products.*	Ad valorem.....	7 per cent.	8.05 pr. ct.	Free.....	
	Common stones and stone objects:					
476	All kinds of marble and alabaster, rough and hewn, but not polished and sculptured.	100 kilograms.....	1.80	2.07	....do.....	
477	Rough works for constructions of marble or hard stone, polished or sculptured, such as columns, parts of columns, consoles, pedestals, ornaments, garden basins, and others.	....do.....	4.50	5.20	....do.....	
478	Different objects of common stones, over 5 kilograms in weight, polished, sculptured, or worked, such as statues, busts, crosses, and funeral monuments, garden ornaments, mortars, and the like, not combined with other products; divers objects of alabaster, of any weight, not combined with other materials; all objects in plaster, painted or bronzed, even combined with wood or ordinary metal.	....do.....	10.00	11.50	....do.....	
479	Objects of any stone, less than 5 kilograms in weight; different objects of any stone, of any weight, combined with other products, excepting bronze (other than melted or turned bronze), ivory, mother of pearl, and precious metals.	....do.....	35.00	40.25	....do.....	16 in cases and barrels; 12 in baskets; 6 in bales.
480	Common building stones, rough and worked; rough stones for millstones.	....do.....	0.20	0.25	....do.....	
481	Paving stones and flags of sandstone, porphyry, and granite for curbstones, parapets, for quays and other uses.	....do.....	0.25	0.30	....do.....	
482	Lithographic stones	....do.....	1.00	1.15	....do.....	
483	Millstones (called French *de la Ferté*) of any size	Each.....	48.00	55.20	....do.....	
484	Millstones of Carpathian quarts	....do.....	36.00	41.40	....do.....	
485	Common millstones of trachyte and others	....do.....	18.00	20.70	....do.....	
486	Grindstones and touchstones (for gold)	100 kilograms.....	3.25	3.75	0.50	
487	Filter stones	....do.....	2.00	2.30	Free.....	
488	Pumice stone	....do.....	2.00	2.30	....do.....	
489	Emery	....do.....	3.00	3.45	....do.....	
490	Chalk in pieces, not cut, and chalk cut in pencils, or otherwise, for billiards and other uses.	....do.....	2.50	2.90	....do.....	
491	Slates, framed or not	100 pieces.....	1.50	1.75	....do.....	
492	Plaster	100 kilograms.....	0.65	0.75	....do.....	
493	Ordinary and hydraulic lime	....do.....	0.30	0.35	Free.....	
494	Natural and prepared cement	....do.....	0.60	0.80	....do.....	
495	Sand, gravel, silex, different marls and clays	....do.....	0.10	0.12	....do.....	
[illegible]	[illegible] (colored earth)	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	Wall and roof bricks	[illegible]	[illegible]	[illegible]	[illegible]	

	common pottery made of ordinary clay, glazed or not, black pottery, tiles, and crucibles.					
499	Ordinary, *i. e.*, unicolor or white earthenware, also white, decorated with colored borders only, but not gilded or silvered; second, pottery included in Art. 498 in combination with wood or iron, undyed, unsized, unlacquered, unglazed, and unpolished, all jugs included in art. 498 with covers and fittings of tin; third, ordinary plates, printed in two colors, which arrive in baskets.	...do	2.40	2.76	....do	
500	Half-fine, *i. e.*: first, earthenware of several colors, painted, printed, silvered, or gilded; second, white porcelain decorated with colored borders, but not gilded or silvered.	..do	8.00	9.20	....do	25 in cases and barrels, 20 in baskets.
501	Fine, *i. e.*, colored porcelain, painted, printed, gilded, or silvered.....	....do	16.00	18.40	....do	
502	Fancy porcelain objects of bisque and earthenware, such as statuettes, figures, office furniture, candlesticks, lamps and the like, white or painted, gilded, bronzed, with sculptured wood or inlaid.	....do	30.00	34.50	....do	
	Glassware:					
503	Glass, quite common, *i. e.*, hollow glass, green, black, and yellow, in its natural color, neither ground, polished or molded; glass in bulk, rough (*i. e.*, sheets, trunks, or unshaped pieces, rough; glass enamel, in bulk).	....do	4.00	4.60	....do	
504	Common glass, *i. e.*, white hollow glass, without ornaments, unpolished and unground, or of which the corks, the bottom or the rim only are polished or ground.	....do	6.50	7.50	....do	
	Window-glass or glass in sheets in its natural color (green, half white, and entirely white).	100 kilograms.....	5.00	7.50	Free.....	
505	Glass, molded, ground, engraved, sculptured, worked massive, not colored, not cut.	....do	20.00	23.00	....do	30 in cases and barrels; 20 in baskets and crates.
506	Cut glass colored, painted, gilded, silvered; lustre pendants	....do	50.00	57.50	....do	
507	Looking-glasses of which the two dimensions do not exceed 45 centimeters, with or without tin foil.	....do	20.00	23.00	....do	
508	Looking-glasses of which one or both dimensions exceed 45 centimeters, with or without tin foil.	....do	40.00	46.00	....do	
509	Fancy objects, such as statuettes, figures, &c., office furniture, candlesticks, lamps, &c., of ornamented glass in any shape, mounted on any other product except precious metals, per cent.	Ad valorem	7	8.05	....do	
	XXI.—*Metals and metal manufactures.*					
	Gold and platina:					
510	Gold in bars and bullion; gold objects broken or in powder	1 kilogram.....	3.00	3.45	....do	Net real.
511	Gold beaten in leaves for gilding.....	....do	3.00	3.45	....do	Real net as to exterior packing. Nothing will be deducted for the paper enveloping the sheets.
512	Gold laminated or stretched in wire	....do	40.00	46.00	....do	Real net.
513	Rough platina in masses; platina in pieces; platina objects whole, other than jewelers' objects.	....do	3.00	3.45	....do	

* When the value of the objects of this category is above 570 francs per kilogram, the importer has the right to claim the application of the regulations for precious stones; i. e. the application of the duty of 4 francs per 100 grams.

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XXI.—*Metals and metal manufactures*—Continued.					
	Gold and platina—Continued.		*Francs.*	*Francs.*	*Francs.*	
514	Goldsmiths' articles of gold, platina, or silver gilt	....do	40.00	46.00	... do	Real net. The boxes and cases are taxed separately and subjected to the duties established for the products of which they are made.
515	Jewelry of gold or platina with or without precious stones	....do	40.00	46.00	....do	
	Silver:					
516	Rough silver in masses and broken silver objects	....do	0.30	0.35	....do	Real net.
517	Silver beaten in sheets for silvering	....do	3.00	3.45	....do	Real net for exterior packing. Nothing allowed for the inside paper, &c.
518	Silver laminated or drawn (ungilt)	....do	16.00	18.40	....do	Real net.
	Silver laminated or drawn (gilt)	....do	21.00	24.15	....do	
519	Silverware	....do	16.00	18.40	....do	Real net. The boxes and cases will be taxed separately and will pay the duty fixed for the material of which they are made.
520	Silver jewelry without precious stones	....do	24.00	27.60	....do	
521	Silver jewelry with precious stones	... do	40.00	46.00	... do	
522	Aluminium	....do	9.00	10.35	....do	
	Imitation and aluminium jewelry:					
523	Silver-plated, imitation silver, and silver gilt jewelry, per cent	Ad valorem	7	8 05	....do	Boxes and cases taxed separately; cardboard boxes and sheets are weighed with the jewelry.
524	Fine imitation jewelry and aluminium jewelry	1 kilogram	20.00	23.00	... .do	
525	Ordinary imitation jewelry	....do	2.50	2.90	....do	
526	Objects plated in gold or silver, not elsewhere mentioned: Gilded or silvered beads, ordinary spangles, brass wire, tinsel, all these gilded or silvered.	....do	0.85	0.98	... do	13 in cases; nothing deducted for the interior packing.
527	Objects of packfong or other alloy, plated, for different uses, such as ornaments, letters, handles, and other small objects entirely metal, gilded.	....do	2.10	2.42	....do	
	Clockwork:					
528	Chronometer watches of gold; watches of any material, ornamented or trimmed with gold, watches ornamented with precious stones.	Each	6.00	6.90	....do	
529	Watches of silver or other material, not mounted nor ornamented with gold or precious stones.	Each	2.00	2.30	....do	
530	Bronze, or bronze and marble clocks, or of any material except mother of pearl, ivory, shell, precious metals, and precious or half precious stones.	1 kilogram	2.50	2.90	....do	16 in cases, barrels and baskets; 9 in bales.
531	Clocks of different compositions imitating bronze, joined or not to wood (merely polished, varnished, lacfuered or painted), to marble or to alabaster, of papier-maché, or of hard cardboard, but unmixed with other products.	....do	1.00	1.15	....do	

532	Wall clocks mounted on wood, simple, worked, or sculptured, plated or not, but not incrusted or inlaid, and without ivory, mother of pearl, shell, or precious metals; clocks in pictures with or without mechanic movements or music.	....do	0.55	0.63	....do.....	16 in cases, barrels and baskets; 9 in bales.
	(For clocks called "Black Forest clocks," see Objects of wood.)					
533	Ordinary small table alarms.....	....do.....	0.80	0.92	....do.....	
534	Very ordinary wooden clocks.....	100 kilograms.....	50.00	57.50	....do.....	20 in cases and barrels; 13 in baskets; 9 in bales.
535	Simple musical boxes, not combined with other objects, or combined with objects which, presented separately, would pay a lower duty than that fixed by this article.	1 kilogram.....	1.00	1.15	.. do.....	16 in cases and barrels; 6 in baskets; 4 in bales.
536	Clock-works of all kinds except watch glasses and pieces for public clocks.	....do	4.00	4.60	....do.....	13 in cases and barrels; 6 in baskets; 4 in bales.
	Copper, brass, and bronze, and objects made of them:					
537	Copper, brass, and bronze. raw, in any form, copper, brass, and bronze objects, broken, copper filings, all of these not plated.	100 kilograms.....	14.00	16.10	Free	
538	Copper, brass and bronze sheets and wire (especially musical instrument strings), not plated.	....do	15.00	23.00	....do	
539	Brass wire for musical instruments and brass wire even covered with cotton or silk.	....do	40.00	46.00	....do	
	(These provisions apply equally to all metallic musical strings, be they made of a single wire, or of metallic wires turned on silk, &c.)					
540	Copper and brass wire for tissues and embroidery, not plated.....	....do	52.00	59 80	....do	12 in cases and barrels; 5 in baskets; 4 in bales.
541	Metallic cloths, per cent.	Ad val.....	7	8 05	....do	
542	Brazier's ware of all kinds for the kitchen and house; vases and apparatuses for works, boats, steam engines, &c., such as boilers, vats, tanks, apparatus for distilling, refining, dyeing, &c.	100 kilograms.....	26.00	29.90	....do	
543	Common objects of copper, brass, or bronze, simply molded or turned, common objects in sheets of copper, brass, or bronze; all these objects neither painted, varnished, nor plated; even combined with common products.	....do	24.00	27.60	....do	Do.
	(In this category are included bronze mortars, taps, printing cylinders, large church clocks, iron nails with brass heads, bells for cattle, rattles, chandeliers, ordinary and without ornaments, ironing irons, chimney fronts, stove doors, &c., and in general all common objects of copper, brass, or bronze not mentioned in other articles.)					
544	Different copper, brass, or bronze objects finely worked, painted, or varnished, combined or not with common products, but not carved or plated.	....do	40.00	46.00	....do	Do.
	(The following objects and objects of the same kind are included in this category: lusters for churches, suspended or hand-lanterns (including lanterns for lighting streets); carriage lanterns, lamps and all other lamp-maker's work; kitchen molds, dishes, carriage and saddle trimmings and ornaments, roses, window fastenings, furniture wheels, door latches and key-shields, not ornamented; carriage-door handles, simple, without ornaments; frames of all sizes and forms, combs, &c.)					
545	Objects of copper or brass wire polished or not, tinned or not, painted or not, but not plated.	... do.....	45.00	51.75	Free	Do.
	(This article includes all objects of copper or brass wire united with other common objects, such as, iron, wood, earthenware, and porcelain (ordinary, simple, without any ornament), glass (even colored). The objects to which these dispositions especially apply are the					

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XXI.—*Metals and metal manufactures*—Continued.					
	Copper, brass, and bronze, and objects made of them—Continued.					
	following: pins, hooks and eyes, nails, rings, hooks, cages, baskets, and such like, entirely or partly made of copper or brass wire. Objects of this article, when plated, pay, besides the duty of 45 francs per 100 kilograms, an extra duty of 50 per cent of this duty.)		*Francs.*	*Francs.*	*Francs.*	
546	Brass and bronze finely worked, carved, or otherwise ornamented, plated, united or not to common products. (Here are included: door and window latches and handles with ornaments in relief, carved, united or not to wood, porcelain or crystal, different ornaments for furniture, or; other uses tools for different trades and especially for binders.)	100 kilograms.....	80.00	92.00	Free.....	12 in cases and barrels; 5 in baskets; 4 in bales.
547	Art objects of bronze, furniture bronzes, fancy bronze objects, finely worked, plated or not, united or not to other products, excepting ivory, shell, mother of pearl and precious metals, otherwise than by simple plating. (Here are included statuettes, busts, vases and others; lusters, girandoles, chandeliers, candlesticks and others; lamps, gas-lighting apparatus (excepting street lamps and arms simply with burners, belonging, the first to Article 544 and the second to Article 546), office furniture (such as ink and sand stands, bells, &c.); fancy objects in general, such as boxes, caskets, vases, frames and others, even table and side board objects; furniture ornaments which in consequence of their work constitute objects of art, &c. When the objects to which these dispositions apply are presented united to materials liable, when alone, to a duty lower than that of the present article (such are marble pedestals, &c.), the importer has the right to request that the different pieces composing the object be separately taxed, if, of course, the separation be possible. The above mentioned objects, united to ivory, mother-of-pearl, shell, and other precious metals, otherwise than by plating, are treated according to Article 701. The duties fixed in Article 547 as well as the observations contained in the present note apply equally to aluminium bronze.)	.....do	180.00	207.00	....do.....	Do.
	Tin:					
548	Raw tin, in any form, in sheets, rods, &c.; tin filings, old broken tin objects.	....do	15.00	18.40	....do	
549	Different tin alloy, in masses	....do	13.00	14.95	....do	12 in cases and barrels; 5 in baskets 4 in bales.
550	Pure tin and tin alloy, in sheets	....do	31.00	35.65	....do	
551	Tin objects, united with lead or zinc, even combined with wood	....do	21.00	24.15	....do	Do.
552	Fine objects of tin and all objects of tin alloy and antimony, not plated	....do	56.00	64.40	....do	

	Antimony:					
553	**Raw antimony**	do	10.00	11.50	do	
554	**Type, stereotype, sheets, stamps, and in general all movable type for printing.**	do	21.00	24.15	do	10 in cases and barrels.
	Nickel and alloy:					
555	**Raw nickel, nickel in masses, beaten, laminated, or drawn**	do	120.00	138.00	do	10 in cases and barrels; 6 in baskets; 4 in bales.
556	**Packfong, in bulk, beaten, laminated, or drawn, not plated**	do	41.00	47.15	do	
557	**Objects of packfong or other alloys not mentioned, including jewelry, not plated.** (Packfong presented in the forms mentioned in Article 556 and packfong objects belonging to Article 557 pay, when plated, 50 per cent. in addition to the ordinary duties. This article includes objects of all kinds (excepting jewels and jewelry, plated) of packfong and other alloys not mentioned in other articles.)	do	90.00	103.50	do	12 in cases and barrels; 6 in baskets; 4 in bales.
558	**Bismuth**	do	200.00	230.00	do	Do.
559	**Cadmia**	do	100.00	115.00	do	
560	**Mercury**	do	40.00	46.00	do	15 in sacks placed in barrels; 12 in cast pots.
	Lead:					
561	**Raw lead, in any form, lead filings; lead objects; lead objects, broken**	do	4.00	4.60	do	
562	**Lead, laminated and in sheets**	do	4.50	5.20	do	
563	**Pipes, large molded objects, balls, shot, and in general all lead objects simply molded, having undergone no other work, not painted, nor varnished, nor polished.**	do	5.50	6.35	do	
564	**Lead objects, i. e., 1st, children's toys entirely or partly of lead, then all objects of lead, varnished, lackered, painted, but not plated; 2d, all lead objects combined with other materials, excepting precious metals.** (If the objects included in this category are plated a surtax of 50 per cent. of the fixed duty will be collected.)	do	16.00	18.40	do	12 in cases and barrels; 5 in baskets.
	Zinc:					
565	**Raw zinc in all forms, zinc filings, broken zinc objects**	do	4.00	4.60	do	
566	**Zinc plates, laminated**	do	5.00	5.75	do	
567	**Melted zinc**	do	7.00	8.05	do	
568	**Common zinc objects, not painted or varnished, not united to other products; building ornaments, and zinc coffins even varnished.**	do	18.00	20.70	do	12 in cases and barrels; 5 in baskets; 4 in bales
569	**Fine zinc objects, painted, varnished, with reliefs or other ornaments, united or not to other products, not plated, especially zinc objects imitating bronze*.**	do	72.00	82.80	do	Do.
	Cast steel and iron, and their manufactures:					
570	**Rough cast iron, pig iron, in bulk, rods, round or square bars; and in general cast metal and iron in any form, not worked for direct use; old iron.**		Free	Free	Free	
571	**Rough steel, for case-hardening, and cast steel in any form, not worked for direct use.**		do	do	do	
572	**Iron and steel rails in any shape, and points**	100 kilograms	do	2.00	do	
573	**Iron tires and iron bands in general, such as hoop-iron, &c**	do	do	2.20	do	
574	**Black or laminated iron, in sheets**	do	2.70	3.10	do	
575	**Tin-plate, iron in sheets, tinned, coppered, coated with zinc or lined with lead, or simply polished.**	do	3.50	5.75	do	

* If the objects included in this category are plated, an extra tax of 50 per cent. of the duty fixed will be collected.

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XXI.—*Metals and metal manufactures*—Continued.					
	Cast steel and iron, and their manufactures—Continued.		*Francs.*	*Francs.*	*Francs,*	
576	Sheets of steel, polished or not	100 kilograms	9.00	10.35	do	10 in cases and barrels; 6 in baskets; 4 in bales.
577	Iron wire; iron wire, tinned, coppered, coated with zinc or lead	do	4.50	5.20	do	
578	Steel wire and cord, for musical instruments	do	16.00	18.40	do	12 in cases and barrels; 5 in baskets; 4 in bales.
579	Coarse iron wire gauze, containing four threads or less to each centimeter, and sieves made thereof.	do	6.00	6.90	do	
580	All other iron wire gauze; sieves made thereof	do	16.00	18.40	do	10 in cases and barrels; 6 in baskets; 4 in bales.
581	Different objects, machine pieces and parts, of coarse cast metal, simply cast, without being otherwise worked, filed, polished, or turned. (Machine pivots and cushions are included in this article.)	do	Free	3.45	do	
582	Cast objects, ornamented, polished, enameled, varnished (excepting enameled vessels for the kitchen).	Ad valorem	7 per cent.	8.05 pr. ct.	Free	
583	Enameled vessels for the kitchen	do	7 per cent.	8.05 pr. ct.	do	
584	Small cast objects, ornamented, polished, varnished or bronzed, even united to other common products.	do	7 per cent.	8.05 pr. ct.	do	
	Iron work:					
585	(*a*) Beams and other large pieces of iron work for the construction of houses and bridges, excepting unturned and unfiled curves.	100 kilograms	3.00	3.45	do	
	(*b*) Other iron work	do	5.00	5.75	do	
586	Forged and filed iron nails, the latter of No. 42 and less	do	4.00	4.60	do	
587	Filed iron nails, above No. 42	do	4.00	9.20	do	
588	Iron and steel screws of all kinds, with or without nuts	do	8.00	9.20	do	10 in cases and in barrels; 4 in baskets; 4 in bales.
589	Iron tubes and pipes	do	5.60	6.45	do	
590	Axles for carriages and wagons	do	6.00	6.90	do	
591	Anchors and large ship chains	do	5.00	5.75	do	
592	Iron chains larger than a centimeter	do	7.00	8.05	do	
593	Iron chains of one centimeter or less	do	7.00	18.80	do	
594	Iron railings for gardens, courts, balconies, not gilded or silvered	do	7.50	8.65	do	
595	Common iron objects, unpolished, not tinned or enameled, united or not to cast metal.	do	5.50	6.35	do	
596	Boxes and cases of iron	do	7.00	8.05	do	
597	Ordinary iron bed-steads, simple, painted only, without other ornaments, such as molded ornaments, nor gilded nor silvered; iron furniture for gardens.	do	8.50	9.80	do	10 in cases and barrels; 6 in baskets; 4 in bales.

	...per, bronze, &c.; painted, var- ...ings, bronzed, &c.; iron furniture for rooms, ...en gilded or silvered, draped or not.	Ad valorem	7 per cent.	8.05 pr. ct.	....do	
599	Iron and steel objects not mentioned, common, simple, not tinned, nor enameled nor polished.	100 kilograms....	7.00	8.05	....do	
600	Iron and steel objects not mentioned, common, simple, tinned, enameled, but not polished; unpolished iron tools and instruments, with or without wooden handles.	.. do	15.00	17.25	....do	12 in cases and barrels; 6 in baskets; 4 in bales.
601	Half fine iron and steel objects, polished, and polished iron and steel tools and instruments, united or not to other products, such as tin, wood, &c.	....do	15.00	28.75	.. do	12 in cases and barrels; 5 in baskets; 4 in bales.
602	Tinware, not polished or painted, united or not to wood.....	Ad valorem.....	7 per cent.	8.05 pr. ct.	... do	
603	Tinware, simply worked, painted, enameled, or varnished, but without ornaments, silvering, or gilding.	... do	7 per cent.	8.05 pr. ct.	....do	
604	Tin and sheet-iron ware, finely worked, painted, enameled, or galvanized, with paintings, or even gilded or silvered, united or not to other ordinary products, such as wood, bronze, packfong, &c., excepting precious metals (if not gilding or silvering), ivory, shell, or mother-of-pearl.	....do	7 per cent.	8.05 pr. ct.	....do	
605	Fine iron and steel objects (excepting cutlery, and surgical instruments), united or not to other common products.	....do	7 per cent.	8.05 pr. ct.	....do	
606	Metallic pens of all kinds, excepting gold and silver pens.....	100 kilograms	85.00	97.75	....do	16 in cases and barrels; 6 in baskets; 4 in bales. Nothing deducted for the small cardboard boxes.
607	Superfine steel objects, *i. e.*, jewelry.....	....do	200.00	230.00	....do	
608	Agricultural instruments of all kinds.....	.....	Free	Free	.. do	
	(The following are considered as agricultural instruments: Plows of all kinds, harrows, rollers, drills, horse-hoes, thrashers, rakes, hay-makers, straw-cutters, root-cutters, sorters, winnowing machines, mowers, reapers, maize-shellers, bruisers, scythes, and sickles.)					
	Cutlery:					
609	Unpolished iron cutlery	100 kilograms.....	15.00	17.25	....do	12 in cases and barrels; 5 in baskets; 4 in bales.
610	Ordinary iron or steel cutlery, mounted on wood, horn, bone, and other ordinary materials; ordinary scissors.	....do	20.00	46.00	... do	
611	Fine cutlery, of polished iron or steel, such as knives, penknives razors, scissors, mounted on other materials than those mentioned in the preceding article, excepting gold and silver.	....do	100.00	115.00	....do	12 in cases and barrels; 6 in baskets; 4 in bales.
612	Knitting needles	....do	12.00	13.80	.. do	12 in cases and barrels; 6 in baskets; 4 in bales. Nothing deducted for small cardboard boxes.
613	Sewing needles, of all kinds, fine crochet, and fishing-hooks	....do	140.00	161.00	... do	
614	Pins, hooks, and eyes, iron hair-pins	....do	14.00	16.10	...do	
	Arms:					
615	Side arms (swords, daggers, &c.)	....do	65.00	74.75	... do	12 in cases and barrels; 5 in baskets; 4 in bales.
616	Ordinary fire-arms	....do	60.00	69.00	....do	
617	Fire-arms of all kinds, excepting fire-arms belonging to Art. 616 and war arms.	....do	155.00	178.25	....do	12 in cases and barrels; 5 in baskets; 4 in bales.
618	War arms.....	.....	Prohibited.	Prohibited.	....do	
619	Accessory pieces for arms	100 kilograms.....	60.00	69.00	...do	
	Machines:					
620	Steam-engines in general, fixed or movable.....	.....	Free	Free	....do	
621	Agricultural machines of all kinds.....	.....	....do	....do	...do	
622	Machines of all kinds serving for the exercise of any profession or industry whatever.	.....	....do	....do	....do	
623	Cast machines other than those named in Arts. 620, 621, and 622.....	100 kilograms.....	6.00	6.90	....do	

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XXI.—*Metals and metal manufactures*—Continued.					
	Machines—Continued.		*Francs.*	*Francs.*	*Francs.*	
624	Whole machines, of steel or iron, other than those named in Arts. 620 to 622.	100 kilograms	9.50	10.95	Free	12 in cases and barrels; 9 in baskets; 8 in wooden crates; 6 in bales.
625	Machines and their accessories, made of ordinary metals other than iron, cast metal, or steel, or in the construction of which other metals than iron, cast metal, and steel predominate, excepting the machines named in Arts. 620 to 622.	do	32.00	36.80	do	
	Coins:					
626	Gold and silver coins having legal currency in Roumania		Free	Free	do	
627	Gold and silver coins not having legal currency in Roumania		do	do	do	
628	Roumanian bronze coins		Prohibited.	Prohibited.	do	
629	Gold or bronze coins not having legal currency in Roumania		The duty of the metal of which they are made.		do	
	Ores:					
630	Iron ore		Free	Free	do	
631	Different ores not mentioned, in quantities above 10 tons, introduced especially for working.	Ton, metric	1.00	1.15	do	
632	Different ores not mentioned, in quantities less than 10 tons	100 kilograms	1.00	1.15	do	
	XXII.—*Carriage-work.*					
	Railway carriages:					
633	First and second class carriages, carpeted; traveling post vans	Each	650.00	747.50	do	
634	Third-class carriages, composite post and luggage vans, luggage vans.	do	450.00	517.50	do	
635	Horse vans	do	350.00	402.50	do	
636	Covered goods trucks, cattle-trucks, timber-trucks; platforms	do	200.00	230.00	do	
637	Tramway carriages	do	300.00	345.00	do	
	Carriages for ordinary roads:					
638	Carriages, broughams, landaus, clarences with four places, traveling carriages with or without baggage boxes, post carriages, and omnibuses with more than 12 places.	do	150.00	172.50	do	
639	Two-placed broughams, with or without a front seat; phaetons and droskies; omnibuses, with from 8 to 12 places, inclusively.	do	107.00	123.05	do	
640	Light carriages, uncovered, such as cabriolets, cabs, dog-carts, &c., pleasure sledges.	do	85.00	98.25	do	

641	Ordinary carriages on springs, covered or not, carpeted inside, such as Briski, small carriages called Brason and Neutitschein; post vans, with or without compartment in front; wagons, with place for the driver, covered or not; omnibuses, with less than eight places.	....do	35.00	40.25	....do	
642	Carriages without springs, covers, or carpets; carriages (*Briski*) of Neutitschein and Radoutz and the like, bordered with iron, and painted; wagons, bordered with iron and painted; peasants' carts and wagons, and the like.	....do	16.00	18.40	....do	
643	Various ambulance carriages	....do	20.00	23.00	....do	
644	Velocipedes, wheeled arm-chairs for invalids, and, in general, all small vehicles pushed by hand.	Ad valorem	7 per cent.	2.05 pr. ct.	....do	
645	Various apparatus on wheels for emptying drains	....do	7 per cent.	8.05 pr. ct.	....do	
	Navigation apparatus:					
646	Steamships, furnished, of all kinds.....	Registered ton....	2.00	2.30	....do	
647	Sailships, furnished, of all kinds.....	....do	0.75	0.85	....do	
648	Drags.....	Gross ton	0.75	0.85	....do	
649	Barks, of one piece of wood, ordinary.....	Each.....	8.50	9.80	....do	
650	Barks, gauging up to 2 tons, inclusively	....do	20.00	23.00	....do	
651	Barks, gauging 2 tons at least, and 5 tons at most.....	....do	35.00	40.25	....do	
652	Barks, of from 5 to 7½ tons, inclusively.....	....do	90.00	103.50	....do	
653	Barks, of 7½ to 10 tons, inclusively	....do	120.00	144.90	.. do	
654	Calques and lighters, of pine, gauging more than 10 tons.....	Gross ton	2.50	2.90	....do	
655	Calques and lighters, of oak, furnished, gauging more than 10 tons.	....do	4.00	4.60	....do	
656	Pleasure barks, of wood or metal, or of wood and metal together...	Each	126.00	144.90	Free.....	
	XXIII.—*Objects of art and of curiosity destined for public museums or private collections.*					
657	Objects of natural history, such as rare animals, living or stuffed or preserved; empty shells and eggs; dried plants for herbariums; live, rare, or exotic plants, choice minerals (excepting gems), petrifactions, bones, and fossil shells, &c.; armors and ancient weapons, curious arms, even modern; manuscripts of all kinds; ancient furniture of an artistic value; mummies and other objects of curiosity or antiquity; objects of art in marble or stone, such as statues, statuettes, busts, bas-reliefs, and other ancient sculptures; bronze and wooden objects of art, such as ancient sculptures of all kinds; ancient vases and pottery (excepting imitations which are found in trade); ancient mosaics, ancient enamels and glass, pictures (without frames), miniatures and other paintings, drawings, engravings, &c.; numismatic objects, such as ancient coins, medals, cameos, and engraved stones; in general all objects which, by their nature, present an interest of science or of curiosity, and which do not form part of ordinary commerce.	....	Free	Free	Free.....	
	XXIV.—*Various products, compositions, and manufactures not included in the other categories.*					
	Various products and compositions:					
658	Albumen	1 kilogram	0.45	0.52	Free.....	16 in cases and barrels.
659	Glue (for joiners); glue for shoemakers and others	100 kilograms.....	7.00	8.05	....do	

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XXIV.—*Various products, &c.*—Continued.					
	Various products and compositions—Continued.		*Francs.*	*Francs.*	*Francs.*	
660	Lip glue	100 kilograms	14.00	16.10	Free	Do.
661	Various liquid gums, in bottles with or without metallic caps, with or without brushes.	do	25.00	28.75	do	
662	Isinglass	1 kilogram	3.00	3.45	do	20 in cases and barrels.
663	Bird-lime	100 kilograms	16.00	18.40	do	
664	Wine grounds and dregs	Ad valorem	7 per cent.	58.0 pr. ct.	do	
665	Pressed yeast	100 kilograms	15.00	17.25	do	16 in cases and barrels; 9 in baskets; 6 in bales.
666	Sediments of all kinds proceeding from the manufacture of oils	do	1.00	1.15	do	
667	Various animal manures	do	0.15	0.17	do	
668	Rags	do	0.50	0.60	0.60	
669	Printing waste and waste paper	do	0.50	0.60	0.60	
670	Shells, with mother-of-pearl, raw	do	14.00	16.10	3.00	
671	Cut or smoothed mother-of-pearl	do	30.00	34.50	Free	
672	Meerschaum (unworked)	1 kilogram	1.00	1.15	do	
673	Rock and marine salt		Prohibited.		do	
674	Amber	1 kilogram	5.00	5.75	0.50	
675	Resin torches	100 kilograms	4.50	5.20	Free	
676	Prepared resin, for corking bottles	do	6.00	6.90	do	
677	Sealing wax of all colors and qualities	do	20.00	23.00	do	Do.
678	Raw or prepared tinder	do	20.00	23.00	Raw, 1.00; prepared, free.	12 in cases and barrels; 9 in baskets; 6 in bales.
679	All other products or compositions not mentioned and not included in other articles.	Ad valorem	7 per cent.	8.05	Free	
	Various manufactures:					
680	Matches of all kinds, of wood, wax, tinder, paper, in packets, or cardboard boxes, or match boxes, sulphured and primed.	100 kilograms	10.50	12.10	do	10 in cases and barrels; 6 in bales.
681	Powder, called war powder and mining powder	do	13.00	14.95	do	12 in cases and barrels.
682	Hunting powder	do	21.00	24.15	do	
683	All fulminating and explosive materials other than powder	Ad valorem	7 per cent.	8.05	do	
684	Mounted and accessory pieces for fireworks	do	7 per cent.	8.05	do	
685	Paper, metal, or cardboard cartridges, charged or not, for all fire-arms.	100 kilograms	30.00	34.50	do	16 in cases and barrels; 12 in baskets; 6 in bales.
686	Fulminating caps	100	70.00	80.50	do	16 in cases and barrels.
687	Projectiles, such as shot, balls, bullets, bombs, grenades, &c. (The duty fixed for the metal of which they are made.)					

	(Follow Arts. 459, 461, and 462.)					
689	Children's toys, of ordinary metal, even combined with other materials, except those which are excepted in Art. 445.					
	(Follow the regulations of the respective metallic manufactures.)					
690	Earthenware or porcelain children's toys even combined with other materials, except those excepted in Art. 445.	100 kilograms	30.00	34.50	Free	25 in cases and barrels; 20 in baskets.
691	Glass toys, even combined with other materials, except those excepted in Art. 445.					
	(Follow the regulations of glass objects.)					
692	Paper or cardboard toys, even combined with other materials, excepting precious metals, fine and half fine stones, real coral, fine pearls, amber, jet, and shell.	do	60.00	69.00	do	16 in cases and barrels; 12 in baskets; 6 in bales.
693	Leather and India-rubber toys.					
	(Follow, according to their quality, the regulations of Arts. 323, 324, 330, 341.)					
694	Umbrellas and parasols of all kinds, of cotton, linen, or woolen stuffs, mounted on whalebone or iron, with handles of any wood, simple or carved, with bones and ordinary metals, even colored and silvered.	Each	0.25	0.30	Free	
695	Umbrellas of pure or mixed silk, of cotton, linen, or wool, lined with pure or mixed silk, mounted on whalebone or iron, with handles of any wood, simple or carved, with bones or ordinary metals.	do	0.70	0.80	do	
696	Objects of hair	Ad valorem	7 per cent.	8.05 per ct.	do	
697	Whalebones cut and prepared for umbrellas, parasols, stays, &c.	1 kilogram	1.20	1.38	do	16 in cases; 12 in baskets; 6 in bales.
698	Openediris, such as grains for cautery, button molds, chaplets, &c.	do	1.00	1.15	do	
	Fancy goods and inlaid work:					
699	Amber objects, mixed or not with other products, including precious metals and stones.	Ad valorem	7 per cent.	8.05 per ct.	do	
700	Objects of shell, ivory, real jet, meerschaum, simple or ornamented, carved, engraved, incrusted, &c.; combined or not with other products, including precious metals and stones.	do	7 per cent.	8.05 per ct.	do	
701	Objects of wood, cardboard, paper pulp, mill-board, reed, straw, bronze, steel, ornamented or otherwise combined with amber, shell, ivory, mother-of-pearl, real jet, meerschaum, fine leather, silk, velvet, precious metals and stones, japanned objects in general.	do	7 per cent.	8.05 per ct.	do	
702	Objects of fine leather, velvet, ornamented or otherwise, combined with amber, ivory, shell, mother-of-pearl, real jet, meerschaum, and precious metals or stones.	do	7 per cent.	8.05 per ct.	do	
703	Common brushes mounted on wood and made of dogs-grass, heath, or exotic fibers.	100 kilograms	24.00	27.60	Free	
704	Brushes mounted on wood, made with pig's, calf's, or horse hair.	do	48.00	55.20	do	20 in cases and barrels; 13 in baskets; 9 in bales.
705	Fine brushes with white hair, on bone, ivory, or common metals	do	130.00	149.50	do	
706	Buttons of horn, bone, white alloy, polished iron, or porcelain	do	30.00	34.50	do	
	Glass or imitation jet buttons are treated as glassware.					
707	Buttons of ivory, wood, walnut, and mother-of-pearl	do	70.00	80.50	do	
708	Various other fancy objects in the composition of which only common products are used.	do	58.00	66.70	do	23 in cases and barrels; 16 in baskets; 9 in bales.
	(As common products are understood all products other than shell, ivory, mother-of-pearl, meerschaum, real jet, amber, precious metals, precious and half fine stones, silk stuffs, including velvet.)					

TARIFF OF ROUMANIA—Continued.

No.	Nature of merchandise.	Unity on which charged.	Import.		Export, both tariffs.	Tare, in per cent. of gross weight.
			Conventional.	General.		
	XXIV.—*Various products, &c.*—Continued.					
	Instruments:		*Francs.*	*Francs.*	*Francs.*	
709	Clavecins, pianos, and pianinos	Ad valorem	6 per cent.	6.90 pr. ct.	Free	
710	All other musical instruments	do	5 per cent.	5.75 pr. ct	do	
711	Astronomical, surgical, and optical instruments (excepting mounted spectacles and opera-glasses); mathematical, physical, and chemical instruments (for laboratories); and instruments for demonstration in teaching of all degrees.		Free	Free	do	

STEAM PLOWS AND MACHINES IN ITALY.

REPORT BY VICE AND DEPUTY CONSUL-GENERAL WOOD, OF ROME, ON THE INTERNATIONAL EXHIBITION OF STEAM PLOWS AND MACHINES FOR THE CULTIVATION OF THE SOIL, TO BE HELD UNDER THE AUSPICES OF THE ITALIAN GOVERNMENT.

The Bulletin of Agriculture (*Bollettino di Notizie Agrarie*), an official publication of the Italian ministry of agriculture and commerce, in its issue of Rome, April 20, 1884, publishes royal and ministerial decrees, including a programme relative to an international exhibition and practical trials of steam plows and machines for the cultivation of the soil by steam. The exhibition and trials will take place under the auspices of the Government, in Turin, during the month of August next, in conjunction with the Italian National Exhibition opened in that city April 26, 1884, which is to continue through the month of October. Although the time is limited, it is still sufficient to enable American manufacturers of steam plows and appliances for tilling the soil by steam to compete in this exhibition, if this information be brought to their notice without delay. Manufacturers can consign their machines on board the steamer of the Italian General Navigation Company in New York, sailing in the latter part of June or about July 1 (Societa Generale di Navigazione Italiana). The steamers of this line leave New York for Genoa fortnightly, and ought to reach the latter port in about twenty-one days, including a stop of two or three days at Marseilles. From Genoa to Turin the distance by rail is 107 miles.

I have the honor to give a translation of the ministerial decree.

[Translation.]

INTERNATIONAL COMPETITION OF STEAM APPLIANCES FOR THE CULTIVATION OF THE SOIL.

Whereas a royal decree dated March 30, 1884, by which, during the national exhibition in Turin, is established an international competition of mechanical appliances for steam plowing for the purpose of encouraging and introducing into Italy the use of such machines and appliances as may be proved best adapted to this manner of tilling the soil;

Whereas Article II of the above-mentioned royal decree provides that by a ministerial decree the special conditions of the competition shall be given. I, having made the necessary arrangements with the executive committee of the national exhibition, with the royal academy of agriculture, and with the agricultural association of Turin, on the proposal of the director-general of agriculture, do decree:

I. The international competition of mechanical appliances, for the cultivation of the soil by steam, will be opened in Turin on the first of August, 1884, and will close not later than the thirty-first of the same month.

II. Inventors, manufacturers, or agents, Italian or foreign, may take part in this competition.

III. Agents (depositari) of machines or tools constructed in Italy or abroad will be considered the representatives of the manufacturers, and they being recognized as the exhibitors, to them in case of awards will be consigned the prizes.

IV. A committee of direction at Turin will provide for the success of the competition. The committee will be composed of two delegates from the ministry of agriculture and commerce, and of the presidents of the executive committee of the national exhibition, the royal academy of agriculture, and the agricultural association of Turin.

V. The prizes offered by the ministry of agriculture and commerce are as follows: A gold medal and * 2,000 lire and the purchase by the Government of the complete machine to which the first prize shall be awarded. Two silver medals and 2,000 lire, (1,000 lire with each medal.)

* 2,000 lire=$386; 1 lira=$0.193.

VI. A special jury will award the prizes.

VII. The transportation of machines and appliances to the exhibition and trial ground, as also the return, will be at the expense of exhibitors, who, however, are entitled to a reduction in carriage by rail and by steamship lines, both for their machines and for themselves.

VIII. Requests for admission to the competition must be presented to the committee of direction (comitato ordinatore) not later than the 15th of July, 1884. These requests must be accompanied with such technical and economical information as exhibitors may judge useful for the better understanding of machines, especially the following:

(*a*) The number and kind of plows, harrows, rooters (estirpatori), cultivators, &c., which they intend to apply to steam traction.

(*b*) The kind and quantity (approximately estimated) of fuel required to operate their machines on various soils per hectare of land.

IX. The committee of direction, on the receipt of applications, will inform intending exhibitors of their acceptance; at the same time it will give any further information desired, and will send them blanks and the necessary papers for the regular shipment of machines to entitle them to a reduction of transportation rates both for machines, exhibitors, and their operatives.

X. No responsibility for loss or damages to machines during transportation or trials will be assumed by the committee.

XI. Machines and appliances will be subjected to all such trials as may be determined by the jury. These trials will take place in various parts of the province of Turin, and on different qualities of soil.

XII. Each machine or appliance must be operated by its manufacturer or by his regularly appointed agent, who will give such information as may be required by the jury. If neither the exhibitor nor his agent be present, his machine will not be placed on trial.

XIII. Exhibitors will be required to employ and will pay their engineers and firemen and all other skilled persons necessary to operate the plow. The committee of direction will employ and pay all other unskilled laborers who may be required, and will also assume all other expenses necessary for the trials.

XIV. Regulations for governing the trials and for the award of prizes will be established by the jury, who, within three months from the close of the competition, will present to the ministry of agriculture and commerce a detailed report, accompanied with drawings of the machines to which prizes have been awarded.

XV. The committee of direction is authorized to make such further dispositions as may be deemed necessary, to which exhibitors must conform.

Rome, April 16, 1884.

B. GRIMALDI,
Minister.

From information received by me at the ministry of agriculture and commerce in Rome, I feel safe in advising American manufacturers of first-class, solid, labor-saving steam plows and machines and appliances for cultivating the soil by steam not to neglect this opportunity for making known and introducing their productions into Italy. The advantages of this exhibition are numerous, and from my knowledge and former experience I have no doubt whatever as to the absolute impartiality and fairness in the trials and awarding of prizes.

Intending exhibitors in the United States would do well to note the following suggestions:

Applications should be made in Italian, or at least in French, on the receipt of which acceptances and blanks will be issued. Exhibitors should present themselves with their blanks to the agents of the Italian General Navigation Company in New York (Societa Generale di Navigazione Italiana), who will then give them bills of lading and passage ticket at reduced rates. This company is subsidized by the Italian Government. To avoid overcharges, fees, commissions, &c., the steamship company might take entire charge of machines to be delivered in Turin within a specified time to *Il Comitato Ordinatore del Concorso Internazionale di Aratri a Vapore, Torino, Italia.**

* Committee of direction of the international competition of steam plows, Turin, Italy. All communications for the committee should be addressed as above.

The provision of time ought to be placed in the contract, but at the ame time all personal supervision that is possible should be taken, as ny delay at Genoa, or on the railway between Genoa and Turin, 107 niles, and at the railway station in Turin must be absolutely guarded gainst.

In the above manner machines and tools ought to arrive safely at the xhibition, with a considerable saving on the usual way goods and ma- hines are shipped to Italy.

It would be to the advantage of exhibitors to provide themselves vith circulars, catalogues, and descriptions with cuts of the machines o be exhibited, adding also any other machines and tools of their man- facture. Of course this should all be printed in the Italian language. Machines ought also to be provided with extra pieces, to replace such arts as may be liable to break.

Engineers and firemen can be hired at Turin—engineers for about 2 per day, and firemen for about $1 per day. Practical operatives only hould be sent from the United States. Board at Turin can be had for bout $1.50 per day. Good Cardiff, Newcastle, New Pelton, and coke re the kinds of coal on sale at Turin. It would be better that engines e adapted to burn wood as well as coal. Responsible agents, speak- ng English and Italian, to represent American manufacturers would xpect about $6 per day; they might also be made useful in the trans- ation and printing of circulars, descriptions, &c., in Italian.

Application for admission should be made immediately that intend- ng exhibitors may ship their machines and take passage by the steamer f the Italian General Navigation Company which leaves New York di- ect for Genoa, touching Marseilles, in the latter part of June, or about he 1st of July. In this way machines and appliances might be placed vithin the exhibition grounds in Turin at the appointed time.

It may be useful to know the general geological formation of the oil of the province of Turin, in which the trials of machines are to take lace. On the left of the river Po it is composed of sandy deposits rom the Alps, making a gravelly or sandy soil; on the right of the iver (calcare argilloso) chalk or clay, derived from the Apennines. The oil in both cases is said to be easily worked, even with the primitive low still in general use.

Deep plowing and good overturning is, however, desired.

The contour of the land is undulating.

CHARLES M. WOOD,
Vice and Deputy Consul-General.

UNITED STATES CONSULATE-GENERAL,
Rome, April 28, 1884.

NOTES.

American trade with Siam.—Consul-General Halderman, under date of March 10, 1884, supplies the following information:

The direct trade with the United States, though small, is greater than in preceding years, and inspires the hope of a continuous increase. Coal-oil, flour, canned goods, clocks, sewing-machines, cotton fabrics are brought here; while gamboge, cardamoms, fine wood, ivory, horns, and hides are exports. Rice in small quantities goes by way of Hong-Kong to San Francisco for Chinese use.

British Honduras and the cotton exposition.—Consul Morlan, under date of April 12, 1884, reports that a committee has been appointed by the administration to attend to having the colony properly represented at the exposition in New Orleans next winter.

Navigation at Gibraltar.—Under date of April 2, 1884, Consul Sprague writes, that 1,426 steamships, of all nationalities, arrived at Gibraltar during this quarter, of which 1,021 were under the British flag. One hundred and nine steamships called at this port to coal during the same period, bound to the United States, of which 100 were under the British flag, 5 under the Italian, 3 French, and 1 German.

Carrying trade between Russia and the United States.—Consul Van Riper, under date of January 6, 1884, writes concerning American shipping at the port of Cronstadt:

In 1882, out of 2,193 vessels there was one American; in 1883, of 1,955 vessels of different nationalities, not one with the American flag, and yet during the year there were 400,000 bales American cotton brought here. Comment is unnecessary on my part. Why cannot we do this carrying trade?

American ships and trade in Denia.—The United States consul at Denia, in a recent report on raisins, says:

No American ships have visited this port for many years, the entire freight business between this port and the United States being done by English steamers, which from August to December average three a week, loading from 200 to 1,200 tons each.

Lumber being scarce and dear, it is largely imported into this district from Norway and Canada for the manufacture of boxes for raisins and oranges; the last transaction I have information of was at £8 10s. for spruce, St. Petersburg standard, 3 by 9, with deal ends.

It seems to me that a portion of this business could be done, if well looked after, by dealers in the United States. I understand the business is now transacted through London dealers with the said mentioned countries.

The Great Eastern as a coal hulk.—Consul Sprague, of Gibraltar, under date of April 2, 1884, supplies the following:

There is a report here, and no doubt with some foundation, of the probability of the British steamship Great Eastern being sent to this port on account of a limited company, consisting of coal dealers, ship-brokers, and others connected with the coal and ship-chandlery business in England. It would be the intention of this proposed limited company to have this mammoth ship to remain here as a coal hulk to supply steamships calling at this port with coal of all descriptions, and also to furnish them with ships' stores and provisions.

It is estimated that the Great Eastern could bring from England in one trip 30,000 tons of coal, and that she would be able to coal with every facility and dispatch alongside five steamships at one time. The promoters of this scheme expect to undersell all other coal dealers already established at Gibraltar.

n to the United States via Bremen.—Under date of April 18, l Wilson reports that—

tion so far this year via Bremen to the United States shows an increase , and the impression prevails that the number for the entire year will exceed that of last.
ıry 1 to March 30, 1884, the steamers of the North German Lloyd have emigrants to the United States; for the same period previous year, crease of 3,774 persons over last year.
umber forwarded from January 1, 1884, to the 16th of this month was e same period last year 26,331.
ımers leaving this port for New York and Baltimore during this month, ıe, are already engaged to their full capacity.
worthy of note that the emigration so far this year consists of a much ›re thrifty class of people than formerly, and consists mostly of small ırtisans from eastern and southern Prussia, all of whom have more or less hem.

imports at Havre.—Under date of March 31, 1884, Consul Havre, submits the following statement of direct imports into ı the United States during the quarter ending March 31,

mplements	packages..	2,307
	sacks..	4,561
	do....	7,326
	casks..	11
	tierces..	30
	barrels..	110
	bales..	314
	cases..	5
	tubs..	5
	sacks..	2,235
	logs..	334
	cases..	14
	do....	7
	do....	10
	sacks..	3,810
	do....	15,000
	do....	1,241
	bales..	57
	sacks..	1,243
	bushels..	29,366
	sacks..	800
	bales..	133,879
	sacks..	168
s	packages..	4,502
	cases..	916
	barrels..	850
	pieces..	195
	logs..	67
	cases..	22
	do....	198
	barrels..	580
	do....	145
	sacks..	997
›n seed	do....	672
	bales..	74
	barrels..	8
	do....	1,320
	tierces..	35
	cases..	785
	do....	55
	do....	5
	pieces..	29
	bales..	192
	do....	61
	sacks..	781

Horse-hair	bales..	91
D	packages..	56
Indigo	barrels..	12
Do	packages..	8
Ivory	sacks..	566
Lard	tierces..	4,201
Do	hogsheads..	125
Do	buckets..	1,209
Do	tubs..	4,675
Do	cases..	25
Do	barrels..	150
Lard oil	do....	200
Leather	cases..	5
Do	packages..	244
Liquors	cases..	10
Lubricating oil	do....	290
Do	barrels..	467
Lumber	planks..	213
Do	cargoes..	3
Machinery	packages..	445
Do	cases..	401
Maple wood	logs..	365
Do	pieces..	254
Mineral oil	barrels..	1,500
Mountain flax	sacks..	112
Naphtha	barrels..	9,931
Oars		5,802
Do	packages..	86
Oil	barrels..	131
Do	cases..	4
Oil cake	sacks..	10,787
Oil of sassafras	packages..	16
Ox tails	bales..	5
Peas	sacks..	20
Petroleum	barrels..	43,838
Phosphate	casks..	130
Do	shipments..	8
Pigs' feet	tierces..	10
Pitchforks	packages..	889
Do	cases..	668
Pork	cases..	4,215
Do	barrels..	45
Potash	casks..	130
Do	barrels..	220
Preserved meats	cases..	1,806
Preserves	packages..	43
Do	cases..	633
Resin	barrels..	735
Rice	tierces..	20
Do	barrels..	5
Rice flour	sacks..	1,299
Roots	bales..	7
Rubber	cases..	10
Do	casks..	19
Do	barrels..	147
Salted hides	packages..	7,470
Do	hides..	3,263
Shells	barrels..	8
Do	case..	1
Silk	cases..	8
Silver	bars..	153
Skins (dried)	bales..	40
Do	skins..	953
Spirit of turpentine	casks..	5
Starch	cases..	25
Staves		170,243
Steel	cases..	7
Sugar	barrels..	4
Tallow	tierces..	594
Do	hogsheads..	413

Tallow	tubs..	20
Do	casks..	211
Do	buckets..	67
Tar	barrels..	2,313
Tobacco	hogsheads..	1,016
Do	cases..	5
Vanilla	do....	34
Vassiline	do....	115
Walnut	logs..	104
Do	pieces..	15
Whale-bone	packages..	205
Whale-oil	casks..	32
Wheat	sacks..	568,403
Whisky	packages..	3
Wine	casks..	3
Wood	pieces..	324
Zinc	bars..	336

Changes in the Canadian tariff.—Commercial Agent Robbins, of Ottawa, transmits the following orders in council from the Canada Gazette, making certain changes in the Canadian tariff, the first and second of April 19, and the third of April 22, 1884:

1.

Ordered, That the charges to be calculated and taken as part of the value for duty of all sugars, molasses, sirups, and other similar products shall include all export and other duties imposed by competent authority, and the cost of all packages, with expense of cooperage, packing, cartage, and other transportation charges, warehouse rent and fire insurance, brokerage and commission, and all other charges or expenses of every kind whatsoever actually chargeable before and up to the time when such sugars, molasses, or sirups or other similar goods are placed on board the ship or other conveyance in which the same are intended to be transported to Canada, and also the full amount of any drawback as provided by section 70 of the said "customs act, 1883," save and except that commission not exceeding two and one-half per cent. may be allowed and not so included in the value for duty on all sugars not over No. 14 Dutch standard, imported direct without transshipment from the country of growth and production, by sugar refiners, for refining purposes.

2.

Ordered, That, subject to the general regulations and restrictions governing the payment of drawback on goods manufactured in Canada and exported therefrom, there may be paid to the Canadian manufacturer of common cut nails of sizes not smaller than "fine 3rds," so manufactured and exported since the first day of May, 1883, a drawback at the rate of ninety (90) per cent. of the duty actually paid upon an equal weight of the imported and duty-paid iron from which such nails were manufactured; or in case the manufacturer cannot show the exact amount of duty so paid, then there may be paid specific rate of sixteen (16) cents per 100 pounds of such cut nails, when in the manufacture thereof there was used exclusively imported and duty-paid "bar-iron," "nail strips," or "steel," or at the rate of eight (8) cents per 100 pounds of such cut nails, provided that in the manufacture thereof there was used imported and duty-paid "puddled bar," together with "scrap" or other duty-free material, the latter in quantity not to exceed twenty-five per cent. of the whole quantity used in the manufacture of the cut nails so manufactured and exported.

3.

Ordered, That steel of No. 20 gauge and thinner, but not thinner than No. 30 gauge, to be used in the manufacture of corset steels, clock springs, and shoe shanks, be, and the same is hereby, placed on the list of articles that may be imported into Canada free of customs duty, when imported by the manufacturers of such articles for such use in their own factories.

JOHN J. McGEE,
Clerk Privy Council.

PRODUCTION AND COMMERCE IN GRAIN AND COTTON IN FOREIGN COUNTRIES.

[Senate Ex. Doc. No. 161, Forty-eighth Congress, first session.]

Message from the President of the United States, transmitting, in response to Senate resolution of February 29, 1884, a report of the Secretary of State on the production, exportation, and importation of grain and cotton in foreign countries.

APRIL 23, 1884.—Read and referred to the Committee on Agriculture and Forestry and ordered to be printed.

To the Senate of the United States:

I transmit herewith a report of the Secretary of State, in response to a resolution of the Senate of February 29, 1884, requesting information concerning the respective average production, consumption, exportation, and importation of wheat, rye, corn, and cotton in foreign countries, together with statistics showing the production and surplus or deficiency in the crops of the past two years in each of such countries, an estimate of the probable requirements of such products from the United States to meet the wants of these countries before the crops of the coming crop year are ready for market, and other available information concerning the questions to which the resolution refers.

CHESTER A. ARTHUR.

EXECUTIVE MANSION,
Washington, April 22, 1884.

To the President:

A resolution of the Senate, passed February 29, 1884, requests the following information:

First. A statement of all information in the Department of State derived from correspondence with the representatives of this Government in foreign countries, or otherwise, regarding the average amount of wheat, rye, corn, and cotton produced, consumed in, exported from, and imported into such countries, each respectively, with the surplus, if any, therein at the end of the crop year 1882.

Second. The amount produced in each of such countries from the crops of 1883, with the probable surplus or deficiency therein during that crop year.

Third. The probable requirements of such products from this country to meet the necessities of such countries, respectively, before the crops of 1884 are ready to market. Also any other information in his possession of interest to American producers and consumers regarding the questions referred to in these resolutions, and especially whether political or other complications in or between foreign countries, or other causes of like character, are likely to occur in the near future calculated to influence the market value of American produce or its cost to consumers.

Fourth. To furnish the amount herein asked for in bushels as per American measurement.

In response to this resolution the undersigned has the honor to lay before the President the accompanying report for transmission to the Senate, should it be deemed compatible with the public interests so to do.

The lack of official statistics concerning the yield of wheat, rye, and Indian corn in several countries, as well as their imports and exports, renders it impossible in many cases to arrive at more than an approximation to the information required. In many countries agricultural

urns are one and two years behind time, while in some countries rcely any trustworthy statistics are collected.

As all official returns in Europe, especially those relating to imports l exports, are computed for the calendar year, the impracticability of nplying with that portion of the resolution requiring the returns for e "crop year" is apparent.

The present depression in the wheat markets of Europe seems at riance with the statistical approximations herewith submitted as to e general production of 1883 and the general wants of 1884.

Of course estimates and approximations can only be based on comratively regular trade movements, and must be necessarily more or ss at fault when any marked and unexpected disarrangement of the gular course of commerce occurs.

Whether the present depressed condition of the wheat trade of Europe occasioned by the several countries drawing upon their reserve stock, local economic reasons, or to affect prices or legislation or public nion, or for some other cause, cannot be asserted with certainty, but s important fact remains, that the calculations and estimates herewith mitted prove, as far as statistics can prove under the circumstances, t the stock of wheat on hand in Europe at the close of 1883 did not erially differ from the stock on hand at the close of the previous r; that the wants of Europe are as imperative and as great as they e in 1883, and that the demands upon the United States should natly be as great, at least, as they were in 1883. How long Europe may an draw upon her reserve stock, or what the exact considerations are ch control the several countries in this regard, especially the United gdom—which may be said to regulate the wheat markets of the ld—time alone can develop.

he most liberal allowance for the wheat output necessary to the ld's consumption shows that the United States should be drawn n during the present year for 188,000,000 bushels, in round numbers, inst 187,000,000 bushels from all other wheat-growing countries. It s appears that the United States supplies one-half of all the foreign eat consumed by the several countries, and that, instead of being trolled by, we should be able to control foreign markets.

The production of cotton is practically confined to the United States, lia, Egypt, Asia Minor, Brazil, and the West Indies, these being the ly important exporting countries, yet it is doubtful whether exact statics showing the annual product of this staple is obtainable from any them, the United States excepted. For this reason their exports only ve been taken into consideration in reaching an approximation as to the ount which each country will be able to contribute to the general nsumption of the present year.

The preparation of these statistics, for reasons above given, has enled much labor and careful consideration. The best available official urns have been consulted, and while in many cases it was not possito give official figures, the results are submitted as being approximans as correct as possible under the circumstances.

The undersigned regrets that he is unable to answer the concluding tion of the third inquiry.

Respectfully submitted.

FRED'K T. FRELINGHUYSEN.

DEPARTMENT OF STATE,
Washington, April 21, 1884.

WHEAT, RYE, AND INDIAN CORN PRODUCTION AND CONSUMPTION.

RUSSIA.

In a report dated September, 1882, Consul-General Stanton, of St. Petersburg, gave the following official statistics concerning Russian cereals:

ACRES PLANTED.

Wheat, 26,891,000; rye, 64,963,000. This applied to European Russia, Poland excepted.

ANNUAL YIELD.

Wheat.—The annual wheat yield for nine years was as follows: In bushels, 1870, 214,142,000; 1871, 178,785,000; 1872, 153,340,000; 1873, 157,563,000; 1874, 249,197,000; 1875, 145,875,000; 1876, 134,288,000; 1877, 246,285,000; 1878, 298,702,000.

Rye.—Same years, respectively, in bushels: 609,783,000; 579,588,000; 549,248,000; 614,231,000; 700,100,000; 544,145,000; 528,079,000; 626,243,000; 709,583,000.

The area under Indian corn is not given; neither is the yield.

The foregoing statistics embrace Russia and Poland, exclusive of the Don Cossacks districts.

In a report dated January, 1883, Consul-General Stanton gives the average wheat yield of European Russia as being about 195,000,000 bushels and of Asiatic Russia at 19,000,000 bushels. In the same report the average yield of rye is given as follows: European Russia, 594,300,000 bushels; Asiatic Russia, 12,000,000 bushels.

According to official returns from British sources, the wheat exports from European Russia during the year 1882 amounted to about 74,000,000 bushels, and the rye to 33,000,000 bushels. As these were very much the largest exports since 1879, it may be safely assumed that the exports of the crops of 1883 will not exceed the same.

SWEDEN.

Average estimated annual yield of wheat and rye in Sweden: Wheat, 3,452,000 bushels; rye, 19,618,000 bushels. Sweden is neither an importer nor exporter of wheat. Flour is imported, however, to the amount of about 330,000 barrels per annum. Rye yield estimated at 19,618,000 bushels; annual import of rye not important. Rye meal is imported, however, to the amount of, perhaps, 30,000,000 pounds.

NORWAY.

According to statistics supplied by the consul-general at St. Petersburg, Russia, the average annual yield of wheat in Norway is estimated at 2,900,000 bushels, and of rye at 1,154,000. The annual net imports of wheat into Norway is estimated at 325,000 bushels, and of rye at 5,200,000 bushels. Rye meal is imported to the annual amount of 720,000 bushels, and wheat flour to the amount of 400,000 bushels.

DENMARK.

The average annual yield of wheat is estimated at 4,700,000 bushels, and rye, 16,254,000 bushels. During the last recorded years for which statistics are available, 1877–'81, Denmark imported about 7,015,000

bushels of wheat and exported 4,730,000 bushels, leaving an excess of 2,285,000 bushels imported for the five years. It will thus be seen that Denmark does not raise enough of this cereal to supply home consumption. With an average crop of rye there is a surplus for export of about 1,500,000 bushels.

Denmark has a comparatively large wheat-flour export trade, however, averaging, perhaps, 554,000 barrels per annum, the greater portion of which goes to England.

A report from Consul Rider, of Copenhagen, estimates the wheat yield of 1883 at a fair average, and that of rye at more than an average.

GERMANY.

The following statistics concerning the production of wheat and rye in Germany in 1882, and the disposition thereof, together with the imports and exports during the year 1882–'83, are taken from a report by Consul-General Brewer, of Berlin:

WHEAT.

Production in 1882	bushels		93,826,000
Imported in 1882–'83	do		26,599,000
Total stock	do		120,425,000
Disposed of as follows:			
Consumption	bushels	103,880,000	
For seed	do	11,182,000	
Exported	do	5,363,000	
Total disposed of			120,425,000

Deducting the exports from the imports leaves the amount of foreign wheat necessary to supply the home consumption, viz, 21,236,000 bushels.

RYE.

Production in 1882	bushels		251,558,000
Imported in 1882–'83	do		21,314,000
Total stock	do		272,872,000
Disposed of as follows:			
Consumption	bushels	221,441,000	
For seed	do	32,886,000	
Exported in 1882–'83	do	756,000	
Total disposed of			255,083,000
Surplus			17,789,000

INDIAN CORN.

Imports for 1882	bushels	2,125,684
Exports for 1882	do	165,000
Amount for consumption	do	1,960,297

The consumption of imported Indian corn in Germany may be estimated at about 2,500,000 bushels for 1884.

HOLLAND.

There are no official reports at hand concerning the yield of cereals in Holland. A report from our consul at Amsterdam would seem to indicate that no very trustworthy agricultural statistics are available in that country.

The wheat imports may be estimated at 16,300,000 bushels, of which it may be calculated that from 7,000,000 to 9,000,000 bushels are re-exported, principally to Germany.

The principal imports are from Russia and the United States. Of the total imports in 1881 Russia supplied about 8,400,000 against a little more than 3,000,000 bushels from the United States.

During the fiscal year 1883 the exports of American wheat to Holland amounted to 2,650,000 bushels.

The imports of wheat from Russia in 1883 were large in proportion to the decrease from the United States, being 9,000,000 bushels, out of a total import, at the port of Rotterdam alone, of 11,000,000 bushels.

The imports of rye in 1882 amounted to about 11,000,000 bushels, and the export to 4,600,000 bushels.

The Indian corn trade of Holland cannot be strictly defined. It is not very important, however.

BELGIUM.

The estimated yield of wheat and rye in Belgium is given as follows: Wheat, 24,000,000 bushels; rye, 18,200,000 bushels.

The amount of foreign wheat required for Belgian consumption in excess of the home product was estimated in 1880 at 16,000,000 bushels, and of foreign rye at 2,000,000 bushels.

The consumption of Indian corn in Belgium amounted to 6,900,000 bushels in 1882, to 8,500,000 bushels in 1880. In Belgian statistics, however, buckwheat is included in the imports of Indian corn. It should also be noted that *maslin*, a mixture of wheat and rye, is entered with the wheat imports.

The imports of wheat into Belgium, according to official statistics, were, during the year 1882, 27,000,000, and the exports 11,000,000. Of the total imports the United States is credited with 12,600,000 bushels. The principal other countries from which the imports were drawn, were Russia, India, Germany, Holland, Canada, Turkey, England, Chili, Australasia.

The latest consular reports from Belgium give promise of an average crop of all cereals for 1883, with the exception of rye. It may be estimated, therefore, that the imports of rye in excess of all exports thereof for 1884 will run up to 3,500,000 bushels. The total imports of rye in 1882 were 4,700,000. Belgian statistics give the United States the third position in the imports of rye in 1882—Russia, 1,570,000 bushels; France, 960,000 bushels; the United States, 600,000 bushels.

In the direct imports of Indian corn, Russia takes the first position, supplying more than one-half of the whole, Germany coming second, Holland third, and the United States fourth. The River Plate takes the fifth position. The imports of Indian corn from Germany, however, is most likely from the free ports of Hamburg, Bremen, &c., which do not enter into the trade statistics of the Empire, although credited to Germany. How much of this corn is American it is impossible to say.

THE UNITED KINGDOM.

According to official returns supplied by Consul-General Merritt, of London, the wheat yield of the United Kingdom for the last twelve years has been as follows:

	Bushels.
1872	88, 320, 000
1873	91, 750, 000
1874	118, 823, 000
1875	80, 822, 000
1876	84, 248, 000
1877	73, 062, 000
1878	101, 460, 000
1879	55, 008, 000
1880	79, 590, 000
1881	77, 954, 000
1882	83, 231, 000
1883	72, 380, 000

Wheat imports and exports.

Years.	Imports.		Exports.	Consumption.
	Value.	*Bushels.*	*Bushels.*	*Bushels.*
1872	$127, 532, 000	78, 639, 000	871, 000	77, 768, 000
1873	138, 884, 000	80, 571, 000	4, 024, 000	76, 547, 000
1874	122, 816, 000	77, 527, 000	1, 966, 000	75, 541, 000
1875	133, 880, 000	96, 835, 000	1, 320, 000	95, 515, 000
1876	112, 796, 000	83, 073, 000	2, 395, 000	80, 678, 000
1877	164, 903, 000	101, 302, 000	2, 109, 000	99, 193, 000
1878	133, 505, 000	93, 195, 000	2, 889, 000	90, 306, 000
1879	151, 140, 000	111, 240, 000	2, 180, 000	109, 060, 000
1880	149, 017, 000	103, 154, 000	3, 506, 000	99, 648, 000
1881	153, 448, 000	106, 676, 000	2, 360, 000	104, 316, 000
1882	166, 499, 000	119, 917, 000	2, 503, 000	117, 414, 000
1883	152, 774, 000	119, 616, 000	2, 450, 000	117, 166, 000

The average annual yield of wheat in the United Kingdom is estimated, according to Consul-General Merritt's report, at 80,000,000 bushels. To supply the home consumption an annual import of 110,000,000 bushels of foreign wheat is necessary, in addition to an average home yield. It is scarcely necessary to add, save as a reminder, that flour is included in these estimates.

In the absence of official statistics, we can only arrive at anything like a close approximation of the stock on hand in the United Kingdom at the close of the year 1883 by taking the yield and net imports of recent years, and deducting therefrom the estimated consumption. The balance should show the stock on hand.

Average yield, 80,000,000 bushels; necessary imports to supply home consumption, 110,000,000 bushels; estimated annual consumption in the United Kingdom, 190,000,000 bushels.

Years.	Yield.	Net import wheat and flour.	Stock on hand.
	Bushels.	*Bushels.*	*Bushels.*
1879	55, 008, 000	130, 696, 000	4, 296, 000
1880	79, 590, 000	120, 654, 000	10, 244, 000
1881	77, 954, 000	125, 916, 000	13, 870, 000
1882	83, 231, 000	143, 414, 000	36, 645, 000
1883	72, 380, 000	149, 566, 000	31, 946, 000
Stock on hand			88, 403, 000

Taking into account the fact that the yield of 1883 was 13 per cent. less than that of 1882 (although it may be assumed that this was taken into account, and had its influence on the import of that year), it is

more than likely that the imports during the present year will equal those of 1883. The increase in the imports of flour into the United Kingdom during the last few years is noteworthy, viz, from 6,000,000 barrels in 1880 to 9,300,000 barrels in 1883.

RYE.

The production and consumption of rye in the United Kingdom are scarcely worthy of consideration, especially when taken in connection with the production and consumption of other cereals.

The average production of rye in the United Kingdom is estimated at 1,980,000 bushels, and the annual imports average about 570,000 bushels. This gives a total annual consumption of only 2,550,000 bushels of rye.

INDIAN CORN.

The following statement shows the annual imports of Indian corn into the United Kingdom during the last twelve years. The re-exports are so insignificant that these imports represent substantially the consumption of Indian corn in the United Kingdom:

Years.	Imports.	
	Value.	*Bushels.*
1872	$42,296,000	49,064,000
1873	32,347,000	37,646,000
1874	36,415,000	35,388,000
1875	39,516,000	40,876,000
1876	62,107,000	78,926,000
1877	43,090,000	60,956,000
1878	61,295,000	83,348,000
1879	47,782,000	72,296,000
1880	54,325,000	74,450,000
1881	50,652,000	66,962,000
1882	31,540,000	36,552,000
1883	50,127,000	63,076,000

The imports of Indian corn into the United Kingdom during the present year should, taking into account the low import during the last three years, amount to 65,000,000 bushels; at the lowest estimate, 40,000,000 bushels of this should be drawn from the United States.

FRANCE.

The following statistics concerning the production of wheat, rye, and Indian corn in France, together with the imports and exports of the same, are collated from a report by Consul-General Walker, of Paris, for the years 1871 to 1881, both inclusive, while the later statistics are compiled from other official sources:

Annual production of wheat in France.

Years.	Area sown.	Yield.	Average yield per acre.
	Acres.	*Bushels.*	*Bushels.*
1871	15,871,843	196,571,839	12.38
1872	17,144,575	342,779,814	19.99
1873	16,867,873	232,370,443	13.77
1874	16,987,076	377,757,337	22.23
1875	17,166,962	285,551,418	16.63
1876	16,950,630	270,810,524	15.96
1877	16,910,221	270,330,606	15.98
1878	17,240,612	284,163,284	16.47
1879	17,153,851	225,172,270	13.12
1880	17,001,133	282,250,549	16.73
1881	17,196,944	274,699,385	15.97
1882	17,873,000	328,396,000	18.37
1883	16,603,000	285,538,000	17.20

Annual production of rye in France.

Calendar years.	Area sown.	Yield.	Average yield per acre.
	Acres.	*Bushels.*	*Bushels.*
	4,694,617	75,087,692	16.00
	4,732,620	84,752,081	17.89
	4,689,556	57,658,065	12.28
	4,623,703	80,499,359	17.41
	4,680,028	76,383,018	16.31
	4,541,690	75,155,461	16.55
	4,562,881	70,928,502	15.53
	4,459,891	68,634,826	15.38
	4,374,526	53,603,463	12.26
	4,566,930	71,841,204	15.71
	4,391,877	67,338,503	15.33
	4,542,000	79,763,000	17.57
	4,393,000	65,971,000	15.01

Annual production of mdslin (rye and wheat mixed) in France.

Calendar years.	Area sown.	Yield.	Average yield per acre.
	Acres.	*Bushels.*	*Bushels.*
	1,241,597	16,768,743	13.60
	1,236,546	25,458,263	20.59
	1,249,166	18,033,514	14.43
	1,264,576	28,075,493	22.22
	1,190,014	20,946,237	17.59
	1,168,854	20,221,243	17.29
	1,147,574	20,170,962	17.58
	1,093,770	17,592,117	16.07
	990,166	12,925,400	13.04
	1,015,104	17,085,452	16.82
	991,957	17,045,963	17.18
	998,642	23,435,000	23.43
	934,826	18,561,000	19.92

Annual production of Indian corn (maize) and millet in France.

Calendar years.	Area sown.	Yield.	Average yield per acre.
	Acres.	*Bushels.*	*Bushels.*
	1,688,823	32,230,178	19.09
	1,726,983	32,067,160	18.57
	1,664,602	27,018,349	16.22
	1,606,723	30,584,405	19.03
	1,644,043	29,576,651	17.98
	1,633,724	20,133,427	12.32
	1,636,183	30,380,598	18.57
	1,643,964	32,014,590	18.35
	1,632,880	22,556,970	13.37
	1,660,238	29,291,039	16.80
	1,623,051	25,541,478	14.92

Wheat imports into and exports from France.

EXPORTS.

Countries.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
Germany	77, 860	1, 458, 500	1, 591, 200	1, 393, 900	2, 795, 000	2, 078, 600	2, 017, 400	519, 000	239, 720	256, 740
Belgium	62, 610	1, 534, 100	1, 548, 800	1, 393, 200	4, 192, 000	1, 510, 200	2, 447, 000	356, 800	233, 280	255, 900
England	117, 080	6, 419, 900	2, 654, 000	1, 039, 500	5, 673, 000	2, 326, 600	5, 566, 000	335, 290	42, 050	12, 130
Spain	5, 420	38, 140	4, 120	38, 440	52, 200	52, 980	7, 830	18, 020	45, 930	11, 450
Italy	4, 940	38, 950	12, 580	48, 790	4, 100	9, 190	7, 380	460	15, 940	13, 050
Switzerland	59, 890	881, 600	858, 100	1, 168, 800	1, 643, 200	982, 900	1, 324, 700	375, 800	225, 370	215, 160
Turkey										46, 230
Algeria	6, 110	12, 460	10, 660	14, 580	3, 740	3, 990	15, 950	56, 490	56, 490	13, 670
Other countries	29, 670	218, 450	164, 590	110, 840	628, 760	268, 930	224, 700	42, 810	86, 950	50, 620
Total	363, 580	10, 602, 100	6, 844, 050	5, 208, 000	14, 692, 000	7, 233, 390	11, 610, 960	1, 704, 670	945, 730	883, 950

IMPORTS.

Russia:										
White Sea							360, 500	2, 067, 600	663, 110	
Black Sea	13, 267, 000	5, 622, 000	3, 317, 000	3, 650, 000	7, 541, 000	7, 570, 000	3, 693, 000	15, 530, 260	17, 540, 400	11, 906, 000
Germany	1, 650, 000	374, 630	447, 030	827, 020	70, 250	77, 420	226, 100	2, 876, 690	2, 745, 380	655, 180
Belgium	2, 995, 800	913, 950	757, 530	1, 085, 970	50, 910	137, 270	60, 540	1, 703, 520	2, 145, 800	1, 558, 300
England	4, 431, 000	1, 002, 000	1, 803, 000	1, 543, 000	75, 300	322, 000	116, 750	1, 595, 600	1, 095, 050	983, 610
Austria							274, 340	598, 520	579, 390	224, 400
Spain	33, 480	10, 640	197, 600	281, 500	1, 650	2, 820	427, 260	313, 220		
Italy	2, 118, 490	836, 360	1, 012, 410	655, 270	426, 370	496, 360	770, 040	1, 685, 070	700, 940	1, 387, 930
Roumania										1, 135, 000
Turkey	5, 012, 000	2, 363, 000	2, 089, 000	4, 961, 000	2, 395, 000	6, 306, 000	3, 326, 910	2, 214, 710	3, 349, 700	1, 113, 300
Egypt										515, 900
East Indies							342, 740	292, 670		1, 293, 000
Austria								116, 610	855, 900	2, 434, 300
United States, Atlantic ports	2, 811, 100	668, 440	2, 015, 730	2, 119, 640	22, 180	496, 570	634, 200	20, 163, 490	44, 538, 860	41, 102, 430
United States, Pacific ports	285, 400	112, 700	367, 800	1, 910, 000	19, 700	89, 700	110, 370	561, 940	4, 033, 000	4, 677, 100
English possessions in North America								388, 160		316, 140
Chili	490, 000	295, 800	360, 000	1, 489, 000	17, 900	73, 800			790, 800	1, 327, 500
Algeria	1, 145, 000	2, 385, 000	3, 443, 000	2, 871, 000	1, 827, 000	3, 170, 000	2, 316, 130	644, 140	1, 550, 980	3, 442, 300
Other countries	3, 088, 600	791, 100	3, 007, 100	3, 409, 700	495, 400	827, 260	57, 500	497, 600	1, 318, 370	444, 210
Total	37, 332, 870	15, 375, 620	18, 817, 200	29, 813, 100	12, 942, 690	19, 556, 200	12, 710, 560	51, 249, 800	81, 902, 680	74, 516, 600
Excess of imports	36, 969, 290	4, 773, 510	11, 973, 150	24, 605, 100						
Excess of exports					1, 174, 310	12, 323, 810	1, 105, 000	49, 545, 130	80, 956, 950	73, 632, 650

Wheat imports for the year 1882, 118,335,600 bushels.
Wheat imports for ten months, 1883, 91,500,000 bushels.

EXPORTS.

Countries.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
Norway	3, 190	769, 100	589, 200	479, 400	422, 400	698, 700	304, 800	13, 490	.....	575, 800
Germany	367, 000	3, 473, 000	2, 473, 000	1, 495, 000	1, 198, 000	2, 680, 000	2, 394, 000	1, 382, 000	694, 700	2, 025, 000
Netherlands	76, 370	344, 300	57, 940	20, 210	121, 200	58, 780	70, 960	9, 930	.....	29, 030
Belgium	1, 655, 000	4, 216, 000	1, 843, 000	1, 382, 000	2, 526, 000	2, 923, 000	1, 811, 000	881, 800	273, 900	1, 196, 000
Other countries	117, 860	1, 091, 000	897, 200	543, 600	926, 300	1, 119, 200	774, 100	617, 900	305, 950	386, 300
Total	2, 219, 320	9, 893, 400	5, 860, 340	3, 900, 210	5, 191, 900	7, 479, 680	5, 354, 860	2, 905, 120	1, 274, 550	4, 213, 120

IMPORTS.

Russia:										
White Sea	.....	.....	.....	.....	.....	.....	.....	33, 690	565, 960	190, 000
Black Sea	.....	.....	.....	.....	.....	.....	.....	177, 310	1, 098, 800	548, 800
Denmark	.....	.....	.....	.....	.....	.....	.....	.....	.....	98, 690
Germany	.....	.....	.....	.....	.....	.....	37, 240	8, 180	536, 320	179, 090
Belgium	61, 100	5, 400	32, 700	65, 900	18, 700	19, 470	47, 300	283, 190	467, 690	115, 040
Austria	.....	.....	.....	.....	.....	.....	.....	.....	3, 700	.....
England	.....	.....	.....	.....	.....	.....	114, 480	2, 250	.....	.....
Spain	60, 900	22, 400	40, 480	167, 500	4, 850	40, 600	.....	.....	.....	.....
Turkey	37, 400	930	7, 240	39, 540	1, 920	4, 970	.....	72, 480	260, 500	86, 570
United States	.....	.....	.....	.....	.....	.....	28, 500	.....	236, 890	296, 200
Other countries	76, 120	26, 360	44, 680	228, 520	34, 210	10, 040	47, 110	56, 980	86, 200	29, 740
Total	235, 520	55, 090	125, 020	501, 460	59, 680	75, 080	274, 630	634, 080	3, 256, 040	1, 544, 130
Excess of exports	1, 983, 800	9, 808, 310	5, 735, 320	2, 098, 750	5, 132, 250	7, 404, 600	5, 079, 230	2, 271, 040	.....	2, 668, 990
Excess of imports	.....	.....	.....	.....	.....	.....	.....	.....	1, 981, 490	.....

Rye imports for the year 1882, 1,624,000 bushels.
Rye imports for ten months, 1883, 1,763,000 bushels.

Indian corn exports from and imports into France.

EXPORTS.

Countries.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
	Bushels	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
England	109,700	30,170	860	161,900	497,500	.....	.....	.....	.....	.....
Belgium	.....	.....	.....	.....	.....	.....	.....	.....	.....	210,900
Spain	19,460	112,400	41,110	42,200	65,270	94,620	108,700	579,400	402,400	122,500
Italy	.....	.....	.....	.....	.....	.....	.....	.....	.....	78,840
Switzerland	74,710	132,700	125,500	210,400	48,460	105,900	221,500	358,100	315,200	67,660
Algeria	.....	.....	.....	.....	.....	.....	.....	.....	.....	51,210
Other countries	45,430	133,730	93,830	90,250	75,700	68,180	147,700	302,730	893,930	115,990
Total	249,300	400,900	266,300	504,750	686,930	268,700	477,900	1,240,230	1,611,530	647,100

IMPORTS.

Russia:										
White Sea	.....	.....	.....	.....	.....	.....	416,500	.....	.....	.....
Black Sea	124,700	41,600	904,000	315,400	88,960	748,600	272,200	2,035,500	1,296,000	559,500
Belgium	.....	.....	.....	.....	.....	.....	2,340	54,010	161,100	5,620
Italy	61,720	114,500	192,000	216,100	673,900	476,600	208,840	229,740	212,290	154,500
Roumania	.....	.....	.....	.....	.....	.....	.....	.....	.....	631,700
Turkey	565,900	375,500	1,331,000	377,000	146,300	3,215,000	2,533,000	3,238,000	4,415,200	405,200
Egypt	.....	.....	.....	.....	.....	.....	87,100	.....	.....	.....
United States	240,900	188,900	406,500	618,000	28,540	347,000	1,898,000	3,010,000	3,210,000	11,463,000
Argentine Republic	41,250	41,450	35,050	30,760	66,450	56,440	.....	181,500	469,700	368,700
Other countries	123,000	160,610	269,500	196,200	53,800	214,000	136,950	153,250	213,480	177,350
Total	1,157,470	922,650	3,228,050	1,753,460	1,057,950	5,057,640	5,554,930	8,902,000	10,068,170	13,766,070
Excess of imports	908,170	522,650	2,961,750	1,248,710	371,020	4,788,940	5,077,030	7,661,770	8,446,640	13,118,970

Imports of Indian corn for year 1882, 12,038,000 bushels.
Imports of Indian corn for ten months, 1883, 13,384,000 bushels.

SPAIN.

average wheat yield of Spain is estimated at 176,000,000 bushels. ıports of wheat into Spain during the year 1882 were the largest ed for any single year, being over 10,000,000 bushels; the largest ed previous import, 1879, being less than one-half this amount. 1878 Spain has been drawing on foreign countries for compara- large amounts of wheat; previous to 1878 the exports largely ex- the imports. Notwithstanding the large imports of 1882, which oubtless caused by special reasons, it would not be safe to esti- he imports during the year 1884 at more than 8,000,000 bushels. imports of rye, barley, and corn being grouped under one head- Spanish statistics, no definite figures can be given as to the ts of each imported. Assuming that the three cereals are im- in equal proportions, it would give 8,500,000 bushels each of rye rn. The consumption of rye and barley being, however, greater hat of corn, a fairer estimate would seem to be an import of 000 bushels of rye and 6,000,000 bushels of corn.

ITALY.

nty Consul-General Wood, of Rome, reports the wheat yield of as follows: In 1882, 112,000,000 bushels; for 1883, 127,000,000 s. The yield for 1883 is estimated at 89 per cent. of an average which is calculated at 144,000,000 bushels. The average annual of wheat into Italy in excess of export for the ten years ending 381 amounted to 10,000,000.

imports and exports for the years 1881 and 1882 were as follows: mports, 5,976,000; exports, 3,813,000 bushels; excess of imports, 00 bushels. 1882, imports, 6,000,000 bushels; exports, 3,500,000; of imports, 2,500,000 bushels. It is hard to account for the de- in the imports of wheat during the years 1881 and 1882, although nsual heavy yield of 1880, 165,000,000 bushels, may be the principal The imports for 1883, in excess of the exports, were 4,700,000. ld not be safe to estimate wheat imports, net, of Italy, for the t year at more than 5,000,000 bushels.

principal countries from which Italy imports wheat are Russia— lf of whole—and Turkey, with small lots from Algeria, India, a, France, and the United States. The exports go to France, Gibraltar, Austria, and Switzerland.

INDIAN CORN.

Indian corn crop for 1883 was estimated at 82,000,000 bushels, t 74,000,000 bushels in 1882, and 55,000,000 bushels in 1881. The ports of Indian corn in 1881 and in 1882 averaged about 3,000,000 s. For the first eight months of 1883 the net imports were) bushels. With the very large yield of 1883 the imports for 1884 very small, if indeed there may not be an excess for export.

RYE.

:alian official returns rye and barley are classed under one head. erage production of both is estimated at 18,000,000 bushels. The or 1882 was under 17,000,000 bushels. Up to and including the 377 the imports and exports of these cereals were about equal, ce that year the imports have averaged about 4,000,000 bushels in

excess of the exports. With the somewhat favorable yield of 1883 Italy will scarcely require to draw on foreign countries for more than 3,500,000 bushels for the present year.

AUSTRIA-HUNGARY.

According to statistics furnished by Consul-General Weaver, of Vienna, the wheat yield of Austria-Hungary in 1882 was unprecedently large; for Austria 11½ per cent. above an average, and for Hungary 136,000,000 against 80,000,000 in 1880, and 109,000,000 in 1878, the two years showing the largest yield in the decade previous to 1882.

The average excess of exports over imports from Austria-Hungary for the six years ending with 1880 was only 2,850,000 bushels. Even the wheat exports of 1879, following the very large yield of 1878, were only 5,340,000 bushels, while in 1880, to make up for the short crop of 1879, the imports exceeded the exports by 4,530,000 bushels. Taking into account the destruction by floods in Hungary in 1881, it may be doubted, even with the extraordinary yield of wheat in 1882, whether the excess of exports over imports amounted to 15,000,000 bushels in 1883. In the absence of official statistics concerning the yield of 1883 it would not be safe to estimate on more than a net export for 1884 of 10,000,000 bushels. In addition to the wheat export wheat flour is exported to the annual amount of, say, 40,000 tons, which represent about 1,500,000 bushels of wheat.

RYE.

The yield of rye in the Empire in 1882 was estimated at 123,000,000 bushels, being largely in excess of the average yield, but 12,000,000 less than the yield of 1878, these being the two largest yields of the years of the decade ending with 1882.

The imports and exports of rye into the Empire are about equal.

INDIAN CORN.

The yield of the Empire in Indian corn for 1882 amounted to 124,000,000 bushels, being about equal to the yield of 1878, the largest yield of any year in the decade. As the imports of maize into Austria-Hungary are about twice the volume of the exports, the Empire has to draw upon foreign countries for an annual supply of about 3,500,000 bushels of Indian corn. In 1880 the import exceeded exports by over 9,200,000 bushels, although the crop of 1879 was an average one. It may, therefore, be assumed that the consumption of foreign Indian corn is increasing, and that the Empire will draw upon foreign countries to the extent of at least 8,000,000 bushels during the present year. The foreign maize consumed in Austria-Hungary is nearly all drawn from Roumania, while exports go chiefly to Germany.

ROUMANIA.

In a report dated September 13, 1882, Consul-General Schuyler gave the following as the average annual production of wheat, rye, and Indian corn, in Roumania: wheat, 25,000,000, rye, 3,500,000, Indian corn, 43,000,000 bushels.

The same authority gives the exports of wheat from Roumania in excess of the imports in 1880 as amounting to 14,600,000, and in 1881 as being only 7,520,000 bushels, or a little over one-half the exports of 1880. As the exports of 1880 would seem to represent the average ex-

ports of the country, in the absence of official statistics, it will be safe to estimate the wheat surplus for export during the present year at 14,600,000 bushels.

The average annual export of rye may be estimated at 2,000,000 bushels.

In 1881 the export of Indian corn ran up to 31,000,000 bushels, an unusually large export. Perhaps 30,000,000 will be in excess of the surplus for export during the present year.

Roumanian wheat goes principally to Austria-Hungary, England, France, and Turkey; the rye to England, Austria-Hungary, and Holland, and the Indian corn to Austria-Hungary and England, with small lots to France and Holland.

DOMINION OF CANADA.

The imports and exports of wheat, rye, and Indian corn into and from the Dominion of Canada during the fiscal year 1883 were as follows:

WHEAT.

Imports, 2,981,000 bushels, of which 2,798,000 were from the United States. Exports, 6,433,000 bushels, of which 561,000 bushels were to the United States. Deducting the imports from the United States from the total exports, left only 3,635,000 bushels of Dominion wheat for export to foreign countries, of which 561,000 came to the United States. Thus it would seem that Canada's part in the supply of the world's wheat trade (outside the United States) was only a little over 3,000,000 bushels. The reason why Canada figures to so large an extent in the wheat statistics of Europe—of England especially—is, that American wheat shipped through Canada is credited to the latter.

According to a report from Commercial Agent Robbins, of Ottawa, the Ontario Bureau of Industry estimates the wheat yield of that province for 1883 at 27,000,000. This is a decrease from the yield of the preceding year of 14,000,000 bushels.

The consul at Winnipeg reports that it will be fortunate for that province (Manitoba) if it has a surplus of the wheat yield of 1883 of 1,000,000 bushels.

From these statistics it would seem that the Dominion, instead of having any wheat for export during the present year, will have to draw upon the United States for a supply to make up the deficiency of the short crop of 1883.

RYE.

The rye yield of 1883 being about the same as that of the preceding year, the export thereof during the present year may equal that of 1883, viz, 1,281,000 bushels, unless a larger home consumption results from the short wheat crop.

INDIAN CORN.

The imports of Indian corn during the fiscal year 1883 were 3,918,000 bushels, all from the United States; and the exports were 2,229,000 bushels, all American corn. It thus appears that imports of corn from Canada into the United Kingdom is simply American corn, although credited to Canada.

INDIA.

According to a report by Consul-General Mattson, of Calcutta, the annual production of wheat in British India, as far as can be ascer-

tained from the very incomplete agricultural returns available, is estimated at 240,000,000 bushels.

The reports for the six years ending March 31, 1883, the date on which the fiscal year ends, were as follows:

	Bushels.
1878	12,176,000
1879	1,950,000
1880	4,312,000
1881	14,012,000
1882	37,135,000
1883	26,400,000

The eccentricity of the exports of Indian wheat renders any approximation as to the quantity which may be available for export during the year 1884 very difficult. The exports in 1878, as will be seen by the above statement, amounted to over 12,000,000, but they dropped during the next two years to 1,950,000 bushels and 4,312,000 bushels, respectively; then, again, sprang up to 14,000,000 and 37,000,000 bushels in 1881 and 1882. The exports for the latter year were the largest recorded for any single year in the history of the wheat trade of India, and being loudly heralded as but the regular annual development of growth of this cereal, had much effect on the general trade, and prepared the world for greater expectations from that quarter. The sudden decline in the export of 1883 shows, however, that the exports of 1882 were abnormal, and were occasioned, according to a report by the assistant secretary to the Government of India in the department of finance and commerce, by the following combination of circumstances:

> The scanty crops of the United States, which were deficient in 1881, by nearly 21 per cent.; the more or less deficient harvest of Europe, and the action of American speculators who *cornered* wheat and held it back waiting for a rise, all helped, with comparatively low rates, to bring the Indian wheat supply into unprecedented prominence in the European markets.

A glance at the foregoing statement will show the very great and unexpected fluctuations in the wheat export of India. In approximating the quantity which may be available for export during the year 1884, all the factors which enter into such approximation seem to indicate that it will not be greater than the export of 1883, if, indeed, it will be as great; but to allow margin sufficient to cover all possible fluctuations, it is thought best to estimate the quantity at 30,000,000 bushels.

ALGERIA.

In a report dated July, 1882, Consul Jourdan gave the cereal yield of Algeria for the year 1880, as follows: Wheat, 44,000,000 bushels, and the exports, all to France, about 3,000,000 bushels. The maize and rye product and export are not of importance.

It is doubtful whether the present year will show even as large an export as that of 1880, and 3,000,000 bushels may, therefore, be set down as the maximum.

AUSTRALASIA.

Consul Griffin, of Auckland, in a report dated November, 1883, gives the following as the wheat yield in the several colonies for the year 1882:

New Zealand, 10,271,000; Victoria, 8,751,000 bushels; New South Wales, 4,042,000 bushels; Queensland, 146,000 bushels; South Australia, 7,356,000 bushels; West Australia, 250,000 bushels; Tasmania, 947,000 bushels; total for the several colonies, 31,763,000 bushels.

According to accounts from the consul-general at Melbourne, the wheat yield of 1883 gave promise of considerable increase on that of 1882. It should be borne in mind that what we call the crop of 1882, in Australia, was not harvested until 1883, the harvest for all the colonies not being completely saved until the month of March. It may be reasonably assumed, therefore, that the wheat yield of Australia in 1883–'84 will reach an aggregate of 35,000,000 or 36,000,000 of bushels, and that 18,000,000 thereof will be available for export. Of the crop of 1882 England imported, in 1883, 5,023,000 bushels.

France has recently begun to import Australasian wheat direct, in large quantities. In 1880, the first noticeable import year, France imported 1,293,000 bushels, and although in 1881 the import fell somewhat short of this amount, 1882 and 1883 will doubtless show an augmenting import. Her direct steam communication with Australasia—recently established—will greatly aid in facilitating this trade.

CHILI.

According to official returns, the export of wheat from Chili during the years 1881 and 1882 were 3,300,000 bushels and 4,730,000 bushels, respectively. These are the latest Chilian statistics at hand.

During the year 1883 the imports of Chilian wheat into the United Kingdom amounted to 4,290,000 bushels. The principal proportion of the remaining wheat export goes to France. Without definite statistics it would not be safe to place the available wheat of the crop of 1883 for export at more than 5,000,000 bushels.

RECAPITULATION.

WHEAT.

Estimated amounts of wheat (flour included) which will be imported into the several countries during the year 1884, and the several countries from which the same must be drawn.

COUNTRIES OF IMPORT.

Europe:	Bushels.
Sweden	990,000
Norway	725,000
Germany	21,236,000
Holland	8,000,000
Belgium	16,000,000
The United Kingdom	150,000,000
France	120,000,000
Spain	8,000,000
Switzerland	10,000,000
Portugal	6,000,000
Italy	5,000,000
Greece	11,000,000
Total wants of Europe	356,951,000
Africa (estimated)	800,000
Asia (estimated)	1,000,000
America (estimated)	16,500,000
Grand total (wheat and flour)	375,251,000

EXPORTING COUNTRIES.

Europe:	Bushels.
Austria-Hungary	11,500,000
Turkey (say)	10,000,000
Roumania	14,600,000
Russia	74,000,000
Total of Europe	110,100,000

	Bushels.
India	30,000,000
Algeria	3,000,000
Australasia	18,000,000
Chili	5,000,000
Egypt	6,000,000
All other	15,000,000
Total	187,100,000
The United States	188,151,000
Grand total	375,251,000

It will be seen by the above statement that of the total imports of foreign wheat, for consumption, into the several countries, the United States supplies one-half.

RYE.

Statement showing the quantities of rye which will be imported for consumption into the several countries during the year 1884, *and the several other countries from which the same must be drawn.*

COUNTRIES IMPORTING.

Europe:	Bushels.
Sweden	7,000,000
Holland	6,500,000
Belgium	3,500,000
The United Kingdom	600,000
France	4,500,000
Spain	10,000,000
Italy	3,500,000
Norway	5,920,000

COUNTRIES EXPORTING.

Russia	33,000,000
Germany	17,787,000
Roumania	2,000,000

From all available statistics, it appears as if there will be comparatively a large surplus of rye in 1884, from the crop of 1883.

INDIAN CORN.

Statement showing the quantities of Indian corn which will be imported for consumption by the several countries during the year 1884, *and the several countries from which the same must be drawn.*

COUNTRIES IMPORTING.

Europe:	Bushels.
Sweden, Norway, and Denmark	4,000,000
Germany	2,500,000
Holland	2,000,000
Belgium	8,000,000
The United Kingdom	65,000,000
France	14,000,000
Spain	6,000,000
Austria-Hungary	8,000,000
Portugal	2,000,000
All other	3,000,000
Total for Europe	114,500,000
Total for all other continents	10,000,000
Total consumption of Indian corn	124,500,000

COUNTRIES EXPORTING.	Bushels.
Russia	10,000,000
Roumania	30,000,000
United States	69,000,000
All other countries	15,500,000
Total	124,500,000

PRODUCTION AND CONSUMPTION OF COTTON.

The consumption of cotton by the manufacturing countries is estimated as follows, the estimates being based on the latest official returns:

THE UNITED KINGDOM.

The imports of cotton into the United Kingdom, less the re-exports of the same, were as follows, during the last four years: 1880, 1,404,244,000 pounds; 1881, 1,471,344,000 pounds; 1882, 1,519,168,000 pounds; 1883, 1,500,000,000 pounds. It will be seen by these figures that the consumption of cotton in the United Kingdom is pretty well fixed. It may therefore be assumed that the consumption in 1884 will equal that of 1883, viz, 1,500,000,000 pounds.

RUSSIA.

The average annual import of cotton into Russia during the last five years for which statistics are available, 1878–1882, amounted to 229,421,000 pounds. The imports for 1881 and 1882 were, however, considerably larger than this average, being about 269,000,000 pounds for each year. Taking into account the steady development of the cotton manufacturing industry of Russia, it is not too much to assume that the consumption of the raw material will amount to at least 275,000,000 pounds during the year 1884.

NORWAY.

The annual import of cotton into Norway may be estimated at 5,400,000 pounds.

SWEDEN.

The latest year for which there are official statistics available showing the import of cotton into Sweden is 1881. The import for that year amounted to 23,996,000 pounds. Taking the ratio of increase in the imports during the four years ending with 1881 into consideration, an import of 25,000,000 pounds may be counted on for 1884.

GERMANY.

The average annual imports of cotton into the German Empire—re-exports deducted therefrom—during the five years ending with 1882 amounted to 285,340,000, pounds, which may be estimated as the annual consumption thereof in that country.

HOLLAND.

Average annual imports during the five years ending with 1882, 23,750,000 pounds. It would not be safe to estimate on a larger import for consumption in 1884 than 24,000,000 pounds.

BELGIUM.

The imports of cotton into Belgium, entered for consumption, during the year 1882 amounted to 55,500,000 pounds. This was 9,680,000 pounds less than the import of the preceding year, but with this exception, the largest import of any year since 1877. Fifty-eight million pounds would be a fair estimate for the needed import of 1884.

FRANCE.

The net imports of cotton into France during the year 1882 amounted to 246,268,000 pounds, and during the year 1881 to 235,400,000 pounds. In the absence of official statistics it would be safe to assume that the demands for 1884 will at least equal those of 1882.

SWITZERLAND.

The imports of cotton into Switzerland during the years 1881, and 1882 were about 27,000,000 and 26,000,000 pounds respectively. The former may be taken as a fair estimate of the annual consumption of cotton in Switzerland.

PORTUGAL.

The annual consumption of cotton in Portugal may be estimated at 7,250,000 pounds.

SPAIN.

The imports of cotton into Spain during the year 1882 amounted to 101,800,000 pounds. The annual increase in the consumption of cotton in Spain as a basis on which to form an estimate of the present consumption, would give an import of 105,600,000 pounds for the present year.

ITALY.

The net import of cotton into Italy during the year 1882 amounted to 106,200,000 pounds. This was the largest import in the history of the trade. There can be no doubt but that the cotton manufacturing industry of Italy is being steadily developed. Yet it is hard to understand how such a development could take place in a single year as to require an increase in the import of the raw material of 36,000,000 pounds. It would not be safe, therefore, to count on more than an import of 100,000,000 pounds for 1884.

AUSTRIA-HUNGARY.

The latest official returns concerning the consumption of cotton in Austria-Hungary give the amounts for 1881 and 1882 as averaging 175,000,000 and 171,000,000 pounds respectively. An import equal to the year 1881 may be counted on for 1884.

CHINA.

The annual import of cotton into China may be estimated at 24,000,000 pounds.

DOMINION OF CANADA.

As Canada draws nearly all its imports of cotton from the United States, our exports thereto practically show the consumption of the raw material in the Dominion. An import of 18,000,000 pounds into the Dominion for 1884 may be calculated on.

MEXICO.

The consumption of foreign cotton for 1884 may be estimated at 21,000,000 pounds.

ALL OTHER COUNTRIES.

If 20,000,000 pounds are allowed for consumption in all other countries, it gives a fair approximation of what the consumption of cotton will be in the several countries, the United States not included, during the year 1884.

COUNTRIES OF PRODUCTION.

The countries of cotton production are the United States, British India, Egypt, Asia Minor, Brazil, the West Indies, &c.

In the report issued by this Department in 1881, entitled "The Cotton Goods Trade of the World," the cotton product of the several countries was given as follows:

	Pounds.
United States	2,770,000,000
East Indies	407,000,000
Egypt, Smyrna, &c	269,000,000
Brazil	44,000,000
West Indies	16,000,000
Total product	3,506,000,000

Showing that the United States produced at that time nearly four-fifths of the cotton crop of the world.

The increase in the cotton product since 1881 has made comparatively little change in the relative order of production above given.

BRITISH INDIA.

The latest official returns showing the export of cotton from British India are for the year 1882. The exports during that year amounted to 630,000,000 pounds—the largest export of any single year since 1872; but 189,000,000 pounds less than the exports for that year. The exports for 1875 were about equal to those of 1882. It will thus be seen that cotton cultivation has made no real progress in India, for, even when due allowance is made for home consumption, the exports for the year 1882 show that less cotton was raised in India in that year than was raised ten years previous thereto.

The imports of Indian cotton into the United Kingdom during the year 1883 amounted to 260,400,000 pounds, being about 153,000,000 pounds less than the import during the preceding year. It is fair to assume that the decline in British imports in 1883 indicates a decrease in the product, and it may therefore be fairly estimated that the exports of Indian cotton in 1884 will be much less than those of 1882.

Great Britain imports about two-thirds of the total exports of Indian cotton. If we take the decrease in the British import in 1883 into ac-

count, as well as the total exports for the years 1879, 1880, and 1881—the year 1882 being exceptional—it would not be safe to estimate the available exports for 1884 at more than 500,000,000 pounds.

EGYPT.

The latest official returns concerning the exports of cotton from Egypt are for the year 1882, and these only give the value thereof. By taking the value of the imports of Egyptian cotton into England during that year, and applying it to the total export, it gives the amount of 230,000,000 pounds; of this total export about 150,000,000 pounds went to England; the remainder went to Russia, France, Italy, Austria-Hungary, Turkey, &c., in respective proportions.

The imports of Egyptian cotton into the United Kingdom during the year 1883 were 1,680,000 pounds greater than for 1882, but less than the import of 1881.

The amount of the re-exports for 1883 is not, however, given.

ASIA MINOR.

According to the returns supplied by our consul at Smyrna, the exports of cotton from that port during the year 1882 amounted to 6,730,000 pounds. If the total exports of cotton from Asia Minor be placed at 7,000,000 pounds it will be allowing a full margin for the product of that province consumed in foreign countries.

BRAZIL.

There are no official statistics at hand showing the present product and export of Brazilian cotton. During the year 1883 the imports of Brazilian cotton into the United Kingdom amounted to 48,000,000 pounds, being 4,000,000 more than the estimated total product of the country in 1881.

France imported 2,956,000 pounds of Brazilian cotton in 1882, the latest French returns on hand. If for all other countries enough be added to make the total export 55,000,000 pounds it will undoubtedly fully cover the product of the country available for consumption in 1884.

The exports of all other places, the United States not included, of course, are put down at 15,000,000 pounds, which it is thought will fully cover the same.

RECAPITULATION.

Statement showing the estimated amounts of cotton which will be required for consumption by the several countries during the year 1884, and the countries from which the same must be drawn.

COUNTRIES OF CONSUMPTION.

	Pounds.
The United Kingdom	1,500,000,000
Germany	285,340,000
Russia	275,000,000
France	246,268,000
Austria-Hungary	175,000,000
Spain	105,000,000
Italy	100,000,000
Belgium	58,000,000
Switzerland	27,000,000
Sweden	25,000,000
Holland	24,000,000
China	25,000,000

	Pounds.
›xico	21,000,000
ınada	18,000,000
›rtugal	7,250,000
›rway	5,400,000
l other	20,000,000
Total consumption	2,917,258,000

COUNTRIES FROM WHICH THE ABOVE MUST BE DRAWN.

	Pounds.
itish India	500,000,000
;ypt	220,000,000
azil	55,000,000
ia Minor	7,000,000
l other	15,000,000
Total outside United States	807,000,000
The United States	2,110,258,000
Grand total	2,917,258,000

CORRECTION.

In No. 39, at the close of his interesting report on the "Crefeld High ›hool of Technical Industry," Consul Potter's name is printed T. W. stead of J. W.

In this connection, consuls are requested to write their names, as ›ll as the names of persons and places in general which enter into eir reports, as legibly as possible.

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UNITED STATES CONSULAR REPORTS.

FRUIT CULTURE

IN

THE SEVERAL COUNTRIES.

REPORTS FROM THE CONSULS OF THE UNITED STATES, IN ANSWER TO A CIRCULAR FROM THE DEPARTMENT OF STATE, ON THE CULTIVATION OF ORANGES, LEMONS, OLIVES, FIGS, AND RAISINS IN THEIR SEVERAL DISTRICTS.

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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC

No. 41½.—MAY, 1884.

FRUIT CULTURE CIRCULAR.

DEPARTMENT OF STATE,
Washington, December 4, 1883.

To the Consul of the United States at ——— :

SIR: At the request of some leading fruit growers of California, the following interrogatories have been prepared, with the view of receiving answers thereto from consular officers in whose districts the fruits specified are specially cultivated.

As the information desired is chiefly intended for the promotion of fruit culture in the United States, you are not limited in your investigations to the specific interrogatories herewith. On the contrary, you are requested to give as full details as possible of all the phases of cultivation; the nature of the soil; the climate; the extent to which the fruits are cultivated; whether for home consumption or export; the manner of their preparation for export; the amount exported, the manner of export, and the countries to which exported—in fine, anything which will help our agriculturists to engage in the cultivation of the fruits understandingly, and which will show the general public the extent and value of the fruit industry and trade as conducted in your consulate.

I am, sir, your obedient servant,

JOHN DAVIS,
Assistant Secretary.

RAISINS.

What is the relative position of vineyards: valley, table, or hillside lands; inland or on the sea-coast?

How near to the sea-coast are the nearest raisin vineyards?

On the coast are the sea-fogs and mist injurious to grapes and apt to cause mildew; if so, what means are used to counteract the same?

What is the custom of pruning in the best conducted vineyards?

What is the character of soil where best results are obtained?

Are best results obtained on hillside, valley, or table land?

Are the lands planted to vines cultivated; if so, how many times per year?

At what age do the vines come into full bearing, and how long do they remain fruitful?

Is there any system of artificial irrigation in practice for raisin culture?

What is the yield, value, and cost of crop per acre per annum?

ORANGES AND LEMONS.

What varieties of trees are grown, and which are the most valuable? At what age do they come into full bearing, and how long do they remain fruitful?

Are the trees seedlings, grafted, or budded?

Are the trees troubled with injurious insect pests or fungous growth? If so troubled, what are the means employed for preventing and curing same?

How far apart are orchard trees planted?

Are orchards inland, or on the sea-coast, hillside, valley, or upland? Where do they yield best results?

How near to the sea-shore are the orchards?

Is there any system of artificial irrigation in use, and is the ground in orchards between trees cultivated; if so, how many times per year?

Give the yield, proceeds, and cost of cultivation per acre per annum in the best orange orchards.

OLIVES.

What varieties of trees produce the best results, and at what age?

What is the process of cultivation followed?

What variety of tree produces the "Queen Olives of Commerce?" Are they the selected fruit of the common olive, or a superior variety grown from an improved tree?

What age do the trees come into full bearing, and how long do they remain fruitful?

What is the average yield per acre of mature trees?

What is the yield in fruit per acre, and how many gallons of olives are required to produce one gallon of oil?

How far apart, in orchards, are the trees?

When are olives intended for pickling picked—ripe or green?

When are olives for oil picked—ripe or green?

What is the process of preparing olives for table use, and what is the process for extracting oil?

Are best results obtained on valley, hillside, or table land?

What is the character of soil best adapted to olive trees?

Is there any system of artificial irrigation in use for olive culture?

How near to the coast are the olive orchards?

Give the yield, proceeds, and cost of cultivation per acre per annum.

What is the annual rainfall, in inches, in your district?

FIGS.

Kind of trees producing the figs of commerce?

Yield per acre, and process of cultivation?

Process of drying and curing the fig?

CONTINENT OF EUROPE.

ITALY.

FRUIT CULTURE IN ITALY.

PORT BY CONSUL-GENERAL RICHMOND ON THE CULTIVATION OF RAISINS, ORANGES, LEMONS, OLIVES, AND FIGS IN ITALY.

VINES AND VINEYARDS.

The vine in Italy is cultivated on the plains, in the valleys, and up the es of the mountains to an altitude of 500 and even of 600 meters above level of the sea. On Mount Etna the cultivation is successfully prose- ed at an elevation of 950 meters above the level of the sea. Along some tions of the coast the vineyards are brought close down to the edge the sea, and the vines are planted right in the sand deposited by the ion of the waves. In this latter case, however, it has been found t the sea-breezes are often hurtful to the vines, but no remedy has r been thought of to combat the evil effects resulting therefrom.

The Italians cultivate the vine in vineyards, which are exclusively oted to that end, or in orchards in conjunction with other fruits and getables. In many places the vines are only allowed to reach a low wth, and are not supported by props, while in others they attain a dium height, and are supported by poles or trained along wires. ien trained to a greater height they are attached to trees, of which ter the most affected for the purpose are the black poplar (in the mpagna), the white poplar (in Tuscany), and the elm (in Emilia). ere are also trellises especially adapted for the training of grapes in- ded for table use. All these different methods of vine-culture are to found in the same sections only varying with the different conditions he soil, the qualities of the vines, and the exigencies of the wine de.

With regard to the soil, it may be stated that in Italy the vine is tivated pretty much everywhere. But there are certain qualities of which are more favorable than others to secure a desirable result o quality and quantity of crop. The most productive vines are those wing in localities subject to inundations, and the best quality of wine oduced by the vineyards planted in light gravel soil of the hills, taining a certain quantity of oxide of iron. In porous volcanic soil grape is of excellent quality, and the wine obtained from the growth chalky soil is very highly esteemed. The best Chianti wine comes m a slaty soil of reddish color, containing a certain percentage of bonate of lime, and in the hilly districts there is considerable chalky not adaptable to any other use than that of viticulture. In the jority of the vineyards where the custom is to plant the vines in s, and train them on trees, the intervening spaces are cultivated in usual rotations of planting, but care is taken to avoid such growths might be incompatible with the successful development of the vine. low-growing vineyards, however, no other culture is ever prose- ed.

t is not generally customary to irrigate the vine, although it is some-

times done with marked success. Drainage is always carefully provided for in the vineyards.

The average yield of wine to the hectare may be set down as 14.29 hectoliters. The yield in Veneto is only 10 hectoliters, but in Piedmont it reaches 23.07 hectoliters to the hectare.

The cost and mode of planting vineyards vary considerably, according to locality. In Viterbo the vines are planted some 18,000 to the hectare, and are trained on poles at an outlay of 1823.58 lire to the hectare, for the first four years, and the cost of maintenance averages 383.03 lire, while the average yield to the hectare is 33 quintals of grapes. At Bari, in Altamura, the vine is cultivated without props, and the cost of planting 6,200 vines to the hectare is 1215.24 lire, the annual cost of maintenance is 266.86 lire, and the average yield per hectare, is 25 quintals of grapes. In Tuscany the vine is also cultivated without props; the planting per hectare costs 2,518 lire; annual cost of maintenance, 466.12 lire, average yield 49.50 quintals to the hectare.

LIMES, LEMONS, AND ORANGES.

The different varieties of these fruits cultivated in Italy, are the lime, the lemon, the sour orange, the sweet orange, and the mandarin.

Limes.—The lime tree, known as the media (*citrus medica*), presents the following varieties: First, the Jewish lime, which bears a small conical fruit; second, the Genoese lime, bearing a large fruit, and cultivated along the Ligurian coast; third, the Salo lime, cultivated at Urri, at Pegli, and at Finale Ligure; fourth, the Florentine, a hybrid of lime and lemon, cultivated in Tuscany and Liguria; and fifth, the monster lime, whose fruit is very large, which is only slightly cultivated.

Lemons.—The varieties of the lemon (*Citrus Limonum*) are the following: First, the Genoese, whose fruit will stand the longest transportation; second, the Garden lemon, which can be forced, bearing a hardy and durable fruit; third, the Bergamot, a small, round fruit, with a smooth, thin rind, having the cells containing the essence of bergamot (this variety is cultivated at Reggio, in Calabria, and in Sicily); fourth, the Neapolitan, a small greenish fruit, very rich in juice; fifth, the Mela-Rosa, a small fruit, showing on the rind the lines marking the divisions of the lemon; and, sixth, the Paradise lemon, whose fruit is very large, and much used in confectionary. This latter is cultivated in the gardens of Genoa.

Oranges.—The strong or sour orange, *Melangolo* (*Citrus Bigaradia Vulgaris*), presents many varieties distinct in the form and size of the leaves and flowers, as well as in the character of the fruit. The fruit vulgarly called Adam's Apple belongs to this class. The sweet orange offers many varieties, which, however, differ very little from each other. The red-juiced orange, the double-floured orange, and the variegated orange are the principal varieties. The Mandarin (*Citrus Delicioza*) is of recent introduction into Italy (the beginning of the present century), and its cultivation has spread rapidly in Sicily, as well as on the Peninsula.

Propagating.—All these different species can be propagated in three ways—by seed, by sprouts, or by cuttings. The different varieties are reproduced only by sprouts, or by cuttings, or by grafting the buds on young wild trees. All orange trees grown from seed should be grafted to improve the fruit, and to eliminate the thorns, which would damage the fruit. If necessary, the orange trees grown from sprouts or cuttings are also grafted.

Diseases.—All orange or lemon trees are subject to damage resulting

from lichenous growths, from insects, and from diseases inherent or specific. Among the diseases are the *rust*, the *cagna*, and the *gum*. Absolute cures for these diseases are unknown; the remedies attempted are so multiplied and varying that their enumeration would carry us beyond the limits of this report.

Planting.—The trees are planted deep in the ground, and some 4 to 6 meters apart. They are grown on the seashore, in valleys, on plains, and on hillsides as high as from 400 to 600 meters above the sea level, and in some few instances even higher. The best results are obtained in those lands lying near the shore. Trees are grown even within a few meters of the sea in the sands deposited by the waves. They are protected from the cold sea-breezes by close hedges, walls, or netted trellises of cane, or by a thick growth of trees, especially poplars.

Irrigation.—Generally speaking, irrigation is indispensable for obtaining an abundant yield of fruit. On the other hand, where orchards are planted on hillsides the trees need no water beyond the rains and subterranean moisture. Water is provided in various ways—by damming up springs, digging wells, even to a great depth, making reservoirs, and raising the water, when necessary, by artesian wells. Water, for intercropping, is brought by means of little canals or pipes into small ditches dug about the trees, and which are filled two or three times a week. The water used should not be cold, and, when necessary, should be tempered by exposure to the open air before using it for irrigation.

Intercropping.—It sometimes happens, and that not unfrequently, that olives are grown together with oranges and lemons. When it is desired to substitute a lemon and orange orchard for a vineyard the vines are left and bear fruit until the trees grow large enough to cover them with shade, and then the vines are cut down.

Olives grown together with oranges and lemons are useful to these latter by reason of the shade afforded and the resulting increased dampness of the ground.

During the six or eight years succeeding the planting of an orange and lemon orchard the ground can be used for growing vegetables (excepting some few exhaustive kinds), as the consequent manuring and watering favors the growth of the trees.

Cost.—The planting of an orange and lemon orchard costs from 1,100 to 1,500 lire per hectare; the expense of planting a hectare of lemon trees amounts to 1,100 lire; the annual expense of cultivation to 469.28 lire. The product of a well-grown lemon grove averages 3,200 lire; the lowest yield 1,600 lire.

OLIVE CULTURE.

Only one species of olive is cultivated in Italy, *Olea* Europea L.

Varieties.—The widest spread varieties are the following: In Liguria, the *Laggiasca* and the *pignole.*

In Puglia, the *pasole*, the *ogliarola*, the *leccese*, and the *siracusana.*

In Tuscany, the *morinelle*, the *morajole*, the *correggiole*, the *razze*, the *grosse*, and the *infrantoie.*

In Sicily, the *ogliaja*, the *biancolilla*, the *calmignana*, the *caltabellotese*, the *cerasola*, the *calabrese*, the *patornese*, and the *giarraffa.*

Maturity.—After the tenth year the olive commences to bear some fruit, and reaches its full maturity of fruitfulness at the age of forty years.

Green olives.—For green olives the fruit is used of the Cucca or Pesaro in Tuscany, of the *Orfana* in Romagna, of the Morellara and the Giar-

raffa in Sicily, and of the *white olive* in Ascoli. Of all these varieties the fruit is large and less saturated with oil than any others.

Dried olives.—For dried olives the fruit of the common trees is best adapted.

Yield.—In Calci a hectare of olive trees yields in abundant years 6.50 hectoliters, or an average of 3.25 hectoliters. The expense of the first planting of a hectare of olive trees amounts to 3,292 lire; annual expenses 250 lire until the tenth year. In the eleventh year the trees begin to bear and reach the climax of their fruitfulness, as has already been stated, at the age of forty years. In the forty-first year the expenses of the hectare of olive trees have been 9,689 lire, and the average yield of oil per annum 3.25 hectoliters. The olives yield *in weight* from 14 to 20 per cent. of oil, and in volume from 20 to 24 per cent., according to the variety, the point of maturity reached, and the manner of extracting the oil.

Planting.—The trees are planted from 12 to 18 meters apart, if they are of a very large and ligneous variety, or if vines or other plants are grown together with them. For short-stemmed trees the distance is shortened to from 5 to 8 meters. On hillsides the distance between the trees is reduced somewhat.

Preserving.—Olives that are put in salted water, or in any other way preserved fresh and sweet, are gathered green; those that are to be dried are gathered ripe. Olives from which oil is to be extracted should be gathered when just ripe; unripe olives give but little oil, and that of a grassy flavor, while those over-ripe yield abundantly, but the oil is coarse and rank. The time for reaching the proper point of maturity depends on the locality, the variety of olive, and upon the season; but when the first fruit drops spontaneously to the ground it may be taken as a sign that the crop is ready for gathering. Generally this takes place through December and January.

The olives that are to be preserved fresh are first soaked in a strong lye, then, after having been put through several washings in clear water, they are placed in salted water, together with wild fennel. Finally they are put into water slightly salted, which must be renewed at least once a month.

Olives that are preserved dried are spread out in the open air, in some place exposed to the *tramontana* (wind), or else they may be dried in ovens.

Extracting the oil.—To extract the oil the olives are placed in a crushing machine, where they are reduced to a paste, which is then subjected to a pressure sufficient to express the oil.

Soil and climate.—The olive grows best on slopes, well sunned, but not too dry, and trees grown in such localities produce a very superior oil. In fertile plains and valleys a large quantity of oil is obtained, but the quality is inferior to that obtained from the hillsides.

The soils best adapted to the growth of the olive are porous and rather moist; such are many chalky and argillaceous soils, also a yellow, sandy soil over argillaceous strata.

Irrigation is not necessary in olive culture.

Locality.—Olive groves are planted sometimes very near the sea, in places least exposed to the wind.

FIGS.

In Italy many varieties of the *Ficus carica* are cultivated. The widest spread of these varieties may be divided into two groups, as follows: The *fico gentile* and the *fico portoghese*, which are the earliest; the *ver-*

lini and *brogiotti neri*, the *brogiotti bianchi*, the *brianzosi*, the *datteri* or *lottati* (which are thick skinned). All these varieties bear fruit only once a year. The *fico albo* and the *fico San Pietro* bear fruit twice a year. A fig tree of medium size will yield generally from 44 to 60 kilograms of fruit. Usually the fig is planted in company with other fruit trees (olive, almond, and others); but fig orchards, where figs alone are grown, may be found (at Lecce, for instance), and in such cases the trees must be planted at such a distance apart that when they reach their fullest development they may not come in contact one with the other; (1) because the fig needs a great deal of sun; and (2) because otherwise, if the partial and easily located infection called rizoctonia should show itself it would spread rapidly through all the orchard. In many places it is the custom to alternate the fig, almond, and olive, so that each fig tree may be isolated.

In Tuscany the figs called *dottati* are preferred for drying. They are peeled and dried in the sun, and then, with a slight sprinkling of anise-seed, are rolled into disks or small loaves. In other cases the rind is not removed, but the fig is split in two, flavored with anise or fennel seed, dried in the sun, and so sent to market.

The common purple or black figs are dried in the oven or in the sun, just as they come from the tree. At Lecce, Reggio, Calabria, Cosenza, and Cotanzaro this system is adopted. They also make a fig paste with walnuts, almonds, cinnamon, &c. It is customary to drop a little honey on them while drying.

There are coming into use stoves with hot-air chambers, especially adapted for drying figs as well as other fruits.

LEWIS RICHMOND,
Consul-General.

UNITED STATES CONSULATE GENERAL,
Rome, April 1, 1884.

OLIVE CULTURE IN ITALY.

[Republished from Consular Reports, No. 36.]

REPORT BY CONSUL CRAIN, OF MILAN.

The superficies devoted to olive culture in Italy is approximately 00,311 hectares (equal to 2,224,668 acres), and the total production of live oil about 3,385,591 hectoliters (or 89,437,157 gallons), distributed s follows:

Districts.	Area of cultivation.	Total production of olive oil.
	Hectares.	*Hectoliters.*
mbardy	4, 591	6, 381
nice	3, 536	9, 321
guria	84, 931	343, 264
illia	4, 694	14, 757
rches and Umbria	76, 271	195, 659
scany	119, 278	285, 006
zio	41, 667	95, 834
th Adriatic	270, 090	557, 649
th Mediterranean	139, 928	636, 540
ily	104, 373	730, 238
rdinia	51, 582	211, 005

The reports of the Italian minister of agriculture contain much that is interesting in regard to this industry.

The olive is indigenous to Asia. It is mentioned in Genesis, Hesiod, and Homer, but was not introduced into Europe, according to Pliny, until the two hundredth year of Rome. It is hardy, and grows wild in Southern Europe—Linnæus calls it *Olea Europœa*, as if indigenous to Europe. It is cultivated in Spain, Greece, Italy, Languedoc, and Provence. The forty-fifth degree of latitude is considered the northern limit of culture. Great heat or cold is unfavorable to the plant. It is not found in Africa far from the Atlantic; and Humboldt noticed in various parts of St. Domingo and South America that it grew there without bearing fruit. It has been erroneously claimed that the olive would only grow near the sea. It is found at great distances inland, but abounds most near the coast, where the temperature is more congenial. The variation of altitude at which the plant can thrive depends upon the region. In Central Italy the greater part of the olive zone is below an elevation of 500 meters, and in Sicily below one of 600, while in the basins of the lakes of Garda and Iseo 450 meters is the extreme limit. At this extreme limit the cultivation is unprofitable, as the fruit often fails to mature. The plant requires a soft and temperate climate. In districts where the temperature is higher than required by the plant it is cultivated by preference on elevated lands; in those where the temperature is low it is given a warm position. The north wind is the enemy of the olive. In the same region it flourishes on high lands protected from that wind, and languishes in low lands exposed to it. Upon the plains of Mugello and the Borgo San Lorenzo, swept by northerly winds, it will not grow, but flourishes three or four miles away on the hills protected by the Apennines.

Cold affects the olive according as the atmosphere is dry or humid. The same degree of cold is more fatal in spring than in winter, because in the former season, the plant having entered the period of vegetation, the young and tender germs are injured; so by reason of the greater moisture the cold of the plains is more injurious than that of the uplands. Nothing is more destructive than the formation of ice upon the branches after snow-storms. The greatest cold which the plant can resist is about 10° Réaumur; at 12° not only the leaves perish but the trunk and roots above ground. It sometimes suffers even at 7° when the cold is accompanied with humidity, or when the plant is in a state of vegetation. Sometimes the leaves are destroyed by a frost apparently light. The greater part of the olives of Liguria and Tuscany perished in the years 1709, 1782, 1820, and 1845.

As to the soil there is not much difficulty. Only exceedingly light or wet land is bad for the plant. It does better ordinarily in argillaceous or calcareous earth, mixed with stones, to which its roots cling, holding steadily against strong winds.

The olive is propagated in four ways—by seeding, by cuttings, by grafting, and by the system called ovolo.

Italian cultivators generally adopt the last method, but as the others are not unfrequently used it may be useful to give some facts in regard to them.

The manner of seeding is much the same as with other plants. The olive used for this purpose is selected from trees well grown, of a robust variety, possessing the qualities desired, and is stripped of its oily pulp. Seeding involves the labor of transplanting, and improving by grafting as t he new plants raised from a given variety will not reproduce it, bu retu rn usually to the wild type. Another objection to this system is th

slow growth of the olive. Hesiod said of it, "those who sow the seed never gather the fruit." However, some use this method, as plants thus obtained have greater dimensions and a more perfect root system.

When cuttings are used they should be young and vigorous, from 50 to 55 centimeters in length, and about the size of a man's wrist. The bark must be bright, smooth, and sappy, and contain towards the lower part some knots, upon which roots form more easily. The cuttings are set in the ground in November in warm localities, and in February and March in temperate. About one-third of the cutting should be above ground, and the upper extremity, where cut, covered with grafting-wax. Although the olive is an exceedingly hard wood, it puts forth roots from cuttings as readily as the willow or poplar. Full-grown trees, even when much denuded of roots, can be transplanted from the forest, and often when those in the olive yards are destroyed they are replaced in this way.

In the process of grafting, sprouts are taken from the base of the tree and the operation performed as with other species of trees.

The propagation of the olive by means of ovolo (eggs), called by the ancients occhi (eyes), is the usual mode, because surer, quicker, and cheaper than any other. Ovolo are woody excrescences on the lowest part of the trunk and on the roots of the olive, and so called because of a supposed resemblance to eggs. These are detached with a sharp knife and put in the ground to the depth of four inches. This is done in November in warm districts, and in March where colder. When the ovolo germinates, one shoot is preserved and the others cut off. The preserved shoot is steadied against wind by a stake to which it is tied. The plant thus started is removed after three or four years to the permanent olive yard.

In most cases the olive has to be grafted, as the young plants usually take the wild type, and consequently yield only small fruit.

By cultivation a number of varieties of the olive have been obtained, differing according to localities; some distinguished by a greater or less vigor of plant, some by drooping, and others by erect leaves, and more especially by the form, size, and color of the fruit. The color varies from green to red, and in some cases to a purple nearly black. Professor Orphanides discovered in a grove of Attica an olive perfectly white, and which was exhibited at the Vienna Exposition under the name of *Olea cucocarpa*, or *chionocarpa*. Tavanti's work mentions twenty-one varieties in Tuscany. Picconi observed sixteen in Liguria, and Caruso fifteen in Sicily.

The extent and kind of pruning depends upon the variety of the olive, and must be performed with care.

Composts of slow assimilation, such as horns, bones, woolen rags, &c., are most used.

OLIVE OIL.

The quality of the oil depends greatly upon harvesting the olives at the proper time. If this is done either too early or too late the product has a fatty flavor and odor.

Italian oil.—The oils of Lucca, Calci, and Buti are the best in the world, and those of Umbria and Liguria are but little inferior. The best article is produced in moderately warm regions.

Thus the oils of Italy are more esteemed than those of the Orient, and of the former the oils of Pisa, Lucca, Arrezzo, Perugia, and San Remo are better than those of Sicily and the Neapolitan provinces.

While soil, climate, and the variety of the plant affect more or less

the quality of the oil, much more depends upon harvesting and pressing the olives properly. This is done much better in Central Italy than farther south.

Spanish oil.—Next to Italy comes Spain in extent of olive cultivation. According to Mueller the production of oil in that country is about 1,135,750 hectoliters per year. It is chiefly cultivated in the basins Guadalquivir, Ebro, and Guadiana, and the product constitutes an important branch of commerce for Andalusia, Aragon, Catalonia, Murcia, Navarra, and the Balearic Islands.

Spanish oils are very little esteemed, and their exportation is rather diminishing.

French and Algerian oils.—In France the cultivation is confined to the southern districts, and covers 94,000 hectares. The production is about 250,000 hectoliters. In Algeria about 150,000 hectoliters are produced, of a quality inferior to that of Italy, but better than that of Levant, Spain, or Portugal.

Austrian oil.—In Austria the olive is a little cultivated in the southern Tyrol, in the territory of Gorixia, Gradisa, and Trieste; more extensively in Istria and Dalmatia. The yearly production is about 264,000 quintals. Of the production in Greece accurate statistics are wanting, though it is known that the cultivation is extensive.

Ottoman oil.—In the Ottoman Empire it is cultivated in Syria, Brussa, Roumelia, and in the islands of Candia, Cyprus, Metilino, Samos, and Rhodes.

Greek oil.—Grecian and Turkish oils are, however, only used in Europe for the manufacture of soap.

PRICES OF OLIVE OIL.

The price of olive oil fell from 170 francs per quintal in 1879 to 120 francs in 1882, and the several grades of this article are quoted in the Bulletin of Agriculture, of the 8th instant, as follows: Oil of Lucca, 168 to 195 francs; olive oil for burning, first quality, 85 to 88 francs; second quality, 78 to 80. The cause of this depreciation is the few uses to which olive oil can be put and the increasing competition of seed oils. The larger olive harvests in Italy and the whole Mediterranean basin is another and lesser cause. The competition is principally with the kinds of olive oil used for industrial purposes, and which represent about two-thirds of the entire production. Alimentary oils scarcely feel this competition. In the retail market the price of the oils of Lucca and Barri has been almost unchanged, and the demand for them abroad fully sustained.

COTTON-SEED OIL.

The seed-oil industry is assuming considerable proportions. Several kinds of this oil were exhibited at the Milan exposition in 1881, and classed among alimentary oils. There were some beautiful specimens of sesame oil exhibited by Messrs. Scerno & Gismundi, who were then producing 30,000 quintals per year.

The importation of cotton-seed oil was arrested in 1882, since which the demand for oleaginous seeds has increased. In 1882 the importation of these seeds amounted to 252,835 quintals, being 52,335 quintals more than the previous year. It is therefore urged that a duty should be imposed on all imports of seeds and seed oils if it is to be continued on cotton-seed oil.

It is claimed that the duty on cotton-seed oil has served no good pur-

ose; that the mixing of cotton oil with olive was not prejudicial to ealth, and that the mixture is now made with oils from flax and nuts, nd other deleterious substances; and that the competition formerly oming from cotton oil has been replaced by oils of other seeds and by ut oils.

It is stated on good authority that no practical method exists by which hese mixtures and their properties can be detected, and it is felt that rauds will diminish, and the public good be promoted, when prejudices gainst good seed oils disappear and they are sold under their true ames.

DUNHAM J. CRAIN,
Consul.

UNITED STATES CONSULATE,
Milan, November 10, 1883.

FRUIT CULTURE IN THE PROVINCE OF GENOA.*

REPORT BY CONSUL FLETCHER.

OLIVES.

The best olive oil is extracted from the following-named trees:

I. The *Giuggiolina*, known as the Lavagnina or Taggiasca.
II. *Radiola* or Razzuolo and Pendolina.
III. *Grappolosa* or Merlina-Pignola doppia.
IV. *Tondolina* or Pignola.
V. *Martellina* or Martena-Papollina.

Seeding and planting.—The length of time between seeding or plant- ıg and fruit bearing depends altogether on the manner in which the ork of cultivation is performed. If trees are raised from seed, sixteen ears is allotted before fruit bearing; if by sprout, plant, or shoot, it epends on the age thereof; if by *snags*, it will take from twelve to ıirteen years before a crop can be realized. A full crop cannot be ɪpected till the tree reaches twenty-five or thirty years.

Plants brought up from seed and shoots must be ingrafted; otherwise ıe trees and fruit remain wild; *snags* also; in fact, all must be grafted taken from the root or below the graft of the parent tree.

The mode of cultivating olives in this province is as follows:

Olives are multiplied by shoots or sprouts; they are, when sufficient tality is assured, replanted in the soil where it is designed they should row; they are mulched every three years with manure of slow decom- ɔsition as, for example, the scrapings off horns, grounded hoofs, woolen ıgs, and stable manure. Manure of quick decomposition is good for ıly one year, and has this disadvantage, it develops more leaves on ıe tree and rank vegetation than it does fruit. The trees must be kept ean, that is, free from sprouts and weeds; standing water must not ɔ allowed around them, for in such case the wood will soon rot and be subject for a malady called "lupa," which very much shortens the fe of the tree.

Olive Regina, or queen olive, known in this province under the name Olive of Spain, is a special quality grown from the imported tree cul ɪated for special purposes. The fruit, however, contains but little oil

* Raisins and figs are not cultivated in the province of Genoa.

and that little has to be extracted before using the olive for culinary purposes.

Production.—If olive trees are well cared for they generally give abundant fruit when they attain the age of thirty years, and even long after this age they increase if properly handled. An olive tree is liable to live for centuries if not destroyed by the "lupa."

The production of the olive depends on the care taken in its cultivation, and much on the weather, for, be it understood, the fruit is exposed nearly the entire year, before maturity, to all atmospheric changes. The yield therefore depends largely on the meteorological vicissitudes of the seasons, and for this reason the exact figures cannot be given. This much, however, can be said, an olive tree between twenty-five and thirty years old will produce about 3 gallons of oil.

A hectare of land (=2,471 acres), in fine, if properly cultivated, ought to produce about 300 gallons of oil. The same measurement of land will produce better results providing the conformation of the soil permits the trees to be set closer than 12 meters, or about 40 feet, apart. The olive crop can be considered only from a biennial stand-point, and the above is the average for two years.

The relation between the weight of olives and the quantity of oil is not constant in all crops, nor equal on all lands, for this reason: On flat lands and in places where rains are frequent less oil and more water exists in the fruit; on the other hand, if the grove is on the hill-side the proportion is as one to four, or one gallon of oil from four gallons of fruit.

The distance between trees on lands exclusively devoted to olives should be about 50 feet—if on flat land and in orchards—on hill-sides 39 feet, or even less—always less on *pedente* or abruot inclinations. *Flats* are especially prepared on hilly lands, and so arranged that the roots of one tree cannot run down and interfere with those of another. In other words, the roots of trees are limited to certain space by the erection of stone walls, and when thus arranged the olive plant will flourish at a distance of only 30 feet apart from its neighbor.

Pickling.—For pickling purposes olives are gathered before they change from green to a reddish color. The faintest tinge from the original green in dicates incipient ripeness. For pickling, olives are usually gathered toward the close of August. The olive must be fully ripe when picked for oil. When matured it drops from the tree. This occurs late in the fall or early winter, as in all its stages, from bud to full-grown fruit, the atmosphere also has its influence in bringing the olive to maturity.

For table use you have the olive in three ways:

(1.) Pickled green.

(2.) Dried when ripe.

(3.) Pickled when dead ripe.

They are prepared as follows: The green olive is placed in a strong solution of lime long enough to take the oily substance out; the well-matured olive is dried in the sun; the ripe pickled olive undergoes the same process as the green, only salt is used instead of lime. Further, the green olive, when purged of oil, is conserved in salted water. The dried olives are placed in jars, with sufficient oil on top to prevent the air drying and oxidizing the bulb, but no oil is allowed to sink to the bottom of the jar, for fear of getting rancid and thereby communicate a bad odor to the fruit. Aromatic herbs in certain quantity are generally used to aromatize the fruit preserved in this way. The ripe olive is pickled in brine of salt, as stated, but the brine is frequently changed

in order to extract the oil and sour flavor. The olive must not be too salt. When prepared as given above olives will keep a long time.

Oil extraction.—Oil is extracted from the olive by crushing the fruit in a stone press. When a certain quantity are reduced to a pulp the crushed mass is placed in a sieve-like receptacle, and this mass when pressed produces the oil. Pressing by hydraulic engines has been tried in the past, in order to obtain a larger quantity of oil, but this power proved too great in that it actually spoiled the oil. Such a pressure is used now only for extracting oil from husks.

Results.—The best results in olive culture are derived from hill-sides and protected by sea winds; in such locality even the most gentle and tender kinds are comparatively safe. Olives raised on flat lands, as elsewhere mentioned, contain more water, for the reason that they are not sufficiently exposed to the sun (on account of mountain shade), and are always liable to be frost-bitten. Even on table-lands the olive is often damaged by winds, which forces the fruit to fall before maturity. Cold winds always hinder the growth of olives, and they are especially damaging to young branches.

Soil and climate.—In Liguria, including all the province of Genoa, the highest elevation of land on which the olive is cultivated ranges about 1,600 feet above sea-level; the orchards, however, are all in the south side of the hills and protected by lofty mountains from north winds.

The olive tree will prosper in almost any kind of soil, rocky land included, except that of a sandy nature; the latter absorbs too much heat, and therefore cause rapid evaporation, which deprives the soil of the necessary moisture in summer. Very damp soil is prejudicial for the reason that the tree is liable to the ravages of the "lupa." Olive groves are not irrigated in the province of Genoa; the soil is generally considered strong enough to retain moisture a long time, even in the dryest seasons. Young plants are watered, however, in the summer, but great caution is practiced in this work, for too much moisture injures the roots and then comes the "lupa" plague. Throughout this entire province the olive orchards are all on the sea-coast; they extend inland but a short distance. You can find inland places, however, where olives would bear well, that is to say, in situations where the temperature undergoes no serious change.

The price of olive oil varies according to the quality and quantity of the crop. For same reason the average annual yield cannot be given. On these points I particularly inquired, but failed to obtain satisfactory answer.

Cost of cultivation.—Answer 5 and 6 give possible yield under ordinary conditions, so I pass to the cost of cultivating olive groves. The work is divided into two parts each year, first, plowing so-called flat lands and hoeing hillside orchards; second, clearing the ground of weeds.

The following statistics were given me by a gentleman experienced in olive culture, and while his statements may not be as clear as desired I cannot do better than give them as narrated:

One day's plowing costs 11 francs ($1.90), and two days with the plow is sufficient for a hectare of land (2.471 acres). Where the plow cannot touch on account of the trees, a hoe is used. As there are about 120 trees in a hectare of land 10 men at least are needed for such work, at 2 francs (38 cents) per day. Now as to manuring groves. The trees should be mulched once in every three years. Experience has taught that the best way was to manure one-third of the orchard this year, one

third next year, and so on. The compost for a tree which yields, say, 10 liters of oil (about 2⅔ gallons) costs about 67 cents; at this rate the manure for an orchard of 120 trees will cost a fraction over $80. Consider then a workman's labor at mulching, 20 days, at 38 cents per day; clearing weeds 8 days at same wages, then pruning, plowing, &c., and you have incurred an average expense on each tree of $0.80. In fine, you realize about $190 from a hectare of olive trees, and it costs you one-half that sum to care for the land. From the other half you must pay Government, provincial, and communal taxes, which are no small items.

Rainfall.—The result of meteorological observations for the last ten years in the province of Genoa shows that about 48 inches of water had fallen each year (almost incredible, but substantially vouched for). It was much less on the oriental coast, and fully one-third less on the western coast.

ORANGES AND LEMONS.

The *genus* Citrus, for economical cultivation, is divided into three classes—the orange, citron, and lemon.

Varieties.—The varieties of oranges generally cultivated in this province are:

(1.) *Citrus Bigarradia dulcis*, or sweet orange.

(2.) The Melangolo of China, or *Citrus Bigarradia cenensis.*

(3.) Citrus deliciosa or Mandarin orange, aromatic and saccharine.

Two kinds of citron are cultivated:

A. *Citrus Medica rugosa*, wrinkled fruit, very good candied or otherwise preserved.

B. *Citrus Medica cedrato*, a very precious and aromatic fruit, the shell of which is also candied.

The following are the varieties of lemon raised here:

A. *Citrus Limonum*, a lemon very good for its acid and medicinal virtues.

B. *Citrus Limonum tenno*, a lemon of gentle rind, fruit rich in acid, but too tender to stand transportation.

C. *Citrus Limonum oblongum*, an oblong lemon, considered very valuable on account of the quantity of acid it contains.

These three varieties are ranked as the best, and, therefore, are cultivated the most in this vicinity.

Productive age.—*Sharp* fruit trees give full crops when about, say, from sixteen to twenty years old, and they keep yielding excellent crops for many years afterwards. It is not often that these varieties become very old, say, not over one hundred years. The foliage expands to a remarkable degree, and an average plant will usually produce 5,000 fruit per annum; especially can this be said of the lemon tree.

Planting.—Before the malady *gomma* (gum) manifested itself it was preferred to multiply the trees by burying the ends of shoots in the ground at proper distance; these shoots soon took root, but now the seed of Melangolo is planted, into which, when grown to a certain size, the qualities desired are grafted. The Melangolo tree, up to the present time, is in a very healthy state and forms a good trunk in which to graft all varieties required. Sharp fruit trees are planted at a distance of about 17 feet apart on flat land, and from 13 to 14 feet apart on hill-sides. The shade of one tree on another is injurious to the blossoming of the latter; therefore care should be taken that fair space be given all the plants in order to have nature do its best for man. The average number of trees in a hectare of land, (or 2.471 acres) is 490, and with

this number as a basis from which to calculate it gives a space of about 20 square meters for each tree.

Situation of orchards.—Orange and lemon orchards in Liguria are all on the sea-coast. Flat and hilly lands in orchard are alike protected by lofty mountains from northern winds. This state of affairs appears necessary; the temperature must be constant, for even the slightest frost damages the lymph of the plant and juice of the fruit. Orange and lemon groves can be, and are, cultivated inland, but the temperature in such places must not reach higher than 40° centigrade and not lower than 2°, or, by Fahrenheit scale, 104° and 32°. Inland orchards usually do well around lakes on account of the constant climate. Groves are also to be seen on table-lands, but always on the south side of mountains; in such localities the temperature is as given above. Sharp fruit trees need a damp soil, and if the land does not contain sufficient moisture it is impossible to obtain a good crop. On naturally dry soil, therefore, water near by is of great value.

Orchards in this province and in all Liguria are near the sea and protected from the cold northern winds by mountains. Many small groves can be seen beside stone walls, to which the branches cling, particularly the lemon. The land throughout this province being so mountainous, it must be taken for granted that but few orchards can be seen on so-called flat lands.

Cultivation.—Orange and lemon groves, on account of the irregular formation of the surrounding country, are necessarily small, and they are owned by about as many people. On account of this natural abruptness and irregularity, added to the fact that the orchards are not large, it is the opinion of the owners that irrigation is too expensive. Further, the soil on which groves are planted is what the Italians term 'strong, and it is claimed for it that it retains moisture for a long time. Again, an idea prevails among the people that springs are of no great depth here, and consequently the water therefrom courses through the earth, and at no great distance from the surface, and that such an existence waters the roots without the aid of man. A happy belief! Certain it is, however, that at Nervi, a few miles along the coast from Genoa, orchards thrive with but little irrigation, and this state of affairs is noticed even in the dryest seasons. Unless groves have strong soil, as above mentioned, and are moistened by an unseen water-course, they will prove unprofitable if the owners do not nourish the dry roots as often as, say, once in eight days. In the first four or five years cultivation between the plants is possible, but when the tops of trees reach a certain expansion cultivation would seem impossible, or, at least, improbable.

Produce and expense.—When the tree reaches between the ages of fifteen and twenty years each one is expected to yield abundant fruit, the orange from 400 to 600, and the lemon from 600 to 1,000. On strong soil and with proper care as the orchards advance in years it is said that a lemon tree will yield from 3,000 to 5,000 fruit per year. The ground is manured like unto the olive groves, some kind of compost, &c. (see No. 15, under head of olives). The expense is estimated as about the same, namely, $105 per hectare (2.471 acres) per annum.

SUMMARY.

Oranges and lemons are not raised in such quantities in this consular district as to admit of large exportation, but the trade in olive oil is a big item.

The following table is copied from advanced sheets of what is de-

signed as an accurate report of the importation and exportation of olive oil, oranges, and lemons for the year 1883, to be soon issued by the Chamber of Commerce of this city. Strange as the item may appear, it will be seen in the table that 28,358 kilograms of *pure* olive oil was imported into Genoa from the United States and Canada during the year 1883:

EXPORTS OF OLIVE OIL.

[All measurement in kilograms, according to the rule of Italy. One hundred kilograms equal to 220 pounds.]

	Kilograms.
United States and Canada	104,045
La Plata States	757,026
Chili and Peru	15,022
Other American ports	2,049,781
Austria	79,764
France	363,247
Germany	27,085
England	121,490
Holland	38,187
Russia	1,610
Spain and Portugal	4,195
Turkey	8,169
Tripoli and other African ports	275
Total	3,387,896

IMPORTS OF OLIVE OIL.

United States and Canada	28,358	
Austria	152,872	
Tripoli and other African ports	1,832,201	
Total		2,013,431
Total exports over imports		1,374,465

EXPORTS OF LEMONS AND ORANGES.

La Plata States	39,102
France	32,532
England	8,750
Egypt	4,577
Total	84,961

IMPORTS OF LEMONS AND ORANGES.

France	6,878	
Tripoli and other African ports	66,155	
Egypt	1,830	
Total		74,863
Total exports over imports		10,098

JAMES FLETCHER.
Consul.

UNITED STATES CONSULATE,
Genoa, Italy, May 1, 1884.

FRUIT CULTURE IN MARSALA.

REPORT BY CONSULAR AGENT RAYSON.

RAISINS.

No raisins are cultivated in this district, the vines planted being unsuitable for any other purpose than wine making. Such being the case I cannot furnish any information on this head.

ORANGES.

Varieties grown: Mandarins, Vaniglia, Blood, Seville, and common Sicilian, of which Mandarins are considered most valuable oranges. Trees come into full bearing at five years and remain fruitful for twenty-five years or more. The trees are produced from seeds of bitter orange and budded afterward. The trees are troubled with lice, to destroy which flour of sulphur is used. The gum disease also affects the trees, and this is cured by peeling off the bark. Trees are planted 10 feet apart, and do best at a distance from the sea, where, sheltered from all strong winds, they yield best in a valley. No orange orchard thrives near the sea, and no trees ought to be planted within a mile or two of the seashore. The orchards are watered by artificial means, and up to age of five or six years proprietors generally grow vegetables between the rows of trees.

Orange and lemon trees produce 200 at five years, after that, if healthy and well cultivated each tree is expected to produce 1,000.

The cost of cultivation is impossible to determine. If the orchard can be watered from a spring the cost is simply the man's wages one day a week in a dry season; if the water has to be drawn or pumped from wells the expense is very heavy. The average cost of cultivation may be calculated at $30 per acre per annum.

OLIVES.

In this district the common Sicilian produces best. There are also Giaraffe and Calamignara. These trees are planted from suckers or can be grafted on to wild olive. The Queen Olive is unknown here. Trees begin to produce at six years, and remain fruitful for hundreds of years. A good tree produces about four pecks each yield. The trees are planted 20 feet apart. The olives are picked green for pickling and ripe for oil. Olives are steeped in strong brine, and after a month fit for table use. Oil is extracted by crushing the olives in a kind of mortar mill. The crushed olives are then placed in strong baskets and put under a power press, and the oil is received in an open tub, where it remains to settle. When clear, the oil is skimmed off and put into jars or casks and is ready for use.

In this district table-land and red, marly soil is best for olive trees. No irrigation is required. Olive trees flourish half a mile from the sea. Once the tree is planted very little expense is required. The tree ought to be banked up with soil for 2 feet and a hollow made in the earth to catch all the rain possible.

FIGS.

The following qualities are known here, viz: Minescava, Beffere, black and white Setonelle, Messinese, Burgesotte, Biancolelli. The trees are planted 12 feet apart; but very few are cultivated in this district; here and there two or three trees are to be found. Figs are dried when ripe, cut in halves, and exposed to the sun. When well browned they are put into baskets and pressed.

GEO. RAYSON,
Consular Agent.

UNITED STATES CONSULATE,
Marsala, March 14, 1884.

FRUIT CULTURE IN SICILY.

REPORT BY CONSUL WOODCOCK, OF CATANIA.

GENERAL REMARKS.

In answer to the circular of the Department relative to the culture of the orange, lemon, olive, fig, and raisin, I have the honor to report for my district as follows:

The Catania consular district comprises the southeast third of the island of Sicily and lies between 36° and 38° north latitude, and between 11° and 13° east (Greenwich) longitude.

The province of Catania takes in the volcano of Ætna and the rich zone of lava soil that surrounds it. The general trend of the land is from the sea-shore upward to the summit of this mountain, which rises to an altitude of 10,872 feet, being over two miles high. The soil is composed of disintegrated lava, and is among the richest and most productive of the world. This inclined plane is habitable to within 9¼ miles of the crater, and is densely populated, the population being 1,424 to the square mile, exceeding that of any other part of Italy. The climate is semi-tropical, temperate, or frigid, in accordance with the altitude, the different zones being represented in the vegetable kingdom in the ascent from the sea to the top of Ætna.

The climate is here (Catania) in winter mild and salubrious. I have been here since the 1st of October last. Frost is seldom known in this lower altitude. We had none during the past winter, though the citizens called it a cold winter. I am forcibly impressed with the similarity of this climate to that of Southern California, having passed several months in that part of the State.

From the sea upward to an altitude of from 700 to 1,000 feet the landscape is beautified by groves of orange, lemon, fig, and olive trees, and vineyards of grape, all of luxuriant growth.

ORANGES AND LEMONS.

These fruits are here designated as "marina" (sea-coast), growing in the lower altitudes near the sea, and "montano" (of the mountain), growing in the higher altitudes. The "montano," or mountain fruit, is the choicest, and commands the best prices in the market, but the crop is not so sure, owing to the frost. The marina orchards bear more abundantly, and the crop is considered a certainty. Of the fruits there

are two kinds, the oval and the round. The trees that bear the oval fruit are preferred. Those trees that blossom several times during the year are a specialty because of their producing fruit at different periods of the season.

Of oranges there are four varieties: the round and oval (as above mentioned) and the mandarin and bitter. Of these the oval is preferred for commerce, being more durable. The round is sweeter and larger. These two kinds are the fruit of export. The mandarin is a small orange of excellent flavor, but being more perishable than the other varieties, it is used more for home consumption than export.

The bitter orange is very hardy, and is adapted to this climate; it is grown for the purpose of propagating the other varieties by budding or grafting them upon its stock. Its fruit is used in the manufacture of preserves. The round orange begins to ripen in December, the oval in January.

Orange and lemon trees begin to bear full crops when they are from ten to fifteen years old. The time of full bearing depends much upon the climate (altitude), cultivation, and fertility of the soil. As to the length of time the trees will remain fruitful, I find a diversity of opinion. Some say that varieties of the orange and lemon budded upon the bitter orange stock will remain fruitful from one to two centuries; others say from forty to a hundred years. When not thus budded upon the bitter orange stock, but raised from the seed, the trees, are short-lived. They become diseased; a gummy substance exudes from them; a disease cankerous in nature attacks the wood and they soon die. The bitter orange tree will, without doubt, continue to bear fruit for two centuries. The budding process is generally in practice. Grafting is but little resorted to.

The process of starting an orange or lemon orchard is as follows:

(1.) The seed of the bitter orange is planted. When the young plants are a year old, they are transplanted. When they have grown to be about one inch in diameter (three or four years old), they are again transplanted and in the place in the orchard where they are to remain. The top of the young trees are then cut off about four feet above the ground. When they become well rooted and growing, the best varieties of the orange and lemon are budded upon the stock. Two buds are generally inserted, and upon opposite sides of the plant. From these buds branches shoot out, and when a quarter of an inch in thickness become of a reddish color.

The trees of the orange and lemon are subject to various diseases. A parasitic growth of fungus nature frequently appears upon the bark of the trees. The lemon tree is more subject to this than the orange. This growth after a rain (or being soaked with water) is removed by scraping. An insect of a dark brown color called the orange louse is very injurious to both the orange and lemon by infesting the bark, leaves, and fruit. A similar insect of a whitish color, known as the lemon louse, attacks the leaves and fruit of the lemon, but not the orange. The fruit of both the orange and lemon are sometimes injured by an insect called the fly. This insect makes its appearance in the beginning of summer, and commences its devastation by stinging the fruit, and depositing therein its eggs. These eggs develop into grubs, which destroy the fruit. Plenty of sunlight and good ventilation are requisite for all these diseases. Tar-water, and water slightly tinctured with kerosene are used as a wash for the leaves and fruit, being applied with a sponge. Soda-ash is also used. When the fly first appears the fruit must be frequently washed.

These remedies are only of temporary benefit. No remedy has yet been discovered for the permanent destruction of these enemies of the orange and lemon, especially the louse.

The distance between the trees to be maintained in planting in the orchard depends much upon the situation of the ground, the quality of the soil and the climate. The distance varies from 4 to 6 meters (13 to 19½ feet).

When the soil is loose, rich, and easily cultivated the lemon trees should be planted at least 6 meters (19½ feet) apart, because, under these circumstances, the trees grow luxuriantly and become large. When the situation of the ground is such that ventilation will not be good the trees should be 6 meters (19½ feet) apart. Where the soil is poor and the climate cold, so that the trees cannot grow large, they may be planted nearer to each other. The distance to be maintained between orange trees is from 4 to 4½ meters (13 to 14 feet). The distance must vary in accordance with the situation and quality of the soil, as in the case of the lemon.

Orange and lemon trees make beautiful the upland and mountain side with their vivid green. They grow luxuriantly in the valleys, and fringe the sea-coast almost to the water line. Those orchards yield the best results which are most distant from the sea and are not of such an altitude as to be affected by the frost. The rich valleys above the sea level, where an abundance of water can be had for irrigation, abound in the best orchards. Some orchards here reach down to the sea, within 330 feet of the shore. Such a location is of course not desirable for the culture of this fruit. The trees so near the sea are more liable to disease, and the quality of the fruit is not so good as that of the orchards more distant.

Artificial irrigation is necessary in this climate. Streams that tumble down from Ætna are utilized for this purpose. Where this is impracticable, water is elevated from wells by steam or mule power.

The ground of the orchards between the trees must be cultivated. It is necessary that the ground be kept perfectly clean. The soil should be worked at least five times a year, commencing in March and ending in October. When the trees are young and small it is not customary to work the soil. It is thought that the vegetable growth protects the young plants from the too-powerful rays of the sun.

Many sections raise crops of vegetables between the trees. This practice, however, is condemned by the best fruit culturists.

The cost of cultivation in the best orchards per annum per hectar ($2\frac{471}{1000}$ acres), on the average, is about 650 lire ($125.45); but where extraordinary out lays must be made for streets through the orchards (as is often the case in this lava-covered soil), and steam power for irrigation, the cost per annum per hectar ($2\frac{471}{1000}$ acres) may be 2,000 lire ($386).

On the average a lemon tree here produces 1,000 lemons per annum; an orange tree 600 oranges. There are cases where trees produce ten times this number.

The Sicilians regard the best time for gathering the fruit for export is in the month of November. The fruit is carefully picked from the tree by hand, caution being exercised not to injure the same by the thorns of the tree or rough handling. The fruit is not rudely thrown into a box, but gently placed in a basket lined with cloth. The stem is left on the fruit, cutting it about a quarter of an inch from the surface of the fruit.

Prior to boxing the fruit is cleaned of insects or other injurious mat-

ter. The box used here generally is capable of holding from 250 to 360 of the fruit, there being a partition in the center. It is lined with common silk paper. Each individual fruit is encased in the same kind of paper prior to boxing. Care is taken that no nail protrudes in the box to injure the fruit prior to placing it therein. The boxes are not made air tight, but interstices are left between the boards for ventilation.

Lemons gathered in the month of November and thus boxed are supposed to keep without spoiling for six months. Oranges will not keep so long. The boxes should be occasionally opened, and any infected ones removed therefrom; especially should this be done just prior to shipment.

During the year 1882 there were exported to the United States from Catania of oranges and lemons 241,107 boxes, of which the invoiced value was $441,227.72.

During the year 1883 there were exported to the United States from Catania 228,857 boxes, invoiced at $324,284.84.

For much of the information relative to the culture of these fruits I acknowledge myself indebted to our worthy vice-consul, Mr. Augustus Peratoner, who owns several fine estates upon which are splendid groves of orange and lemon.

OLIVES.

At least ten varieties of the olives of the present age were known and cultivated by the ancient Romans. There are the Pausio, Algiano, Licinio, Sergio, Culminio, Orchide, Regio, Cercite, Nevio, and Mirteo. Of these the best for yielding oil are the Licinio and the Sergio. The fruit of the Pausio, Regio, and Orchide is of fine flavor, and excellent for eating as condiment, and yields a good quality of oil.

In this part of Italy, especially in the neighborhood of Syracuse, there are probably greater varieties of the olive than were known to the old Romans. Among these may be mentioned the Pæsano (native), by some called the African; the Oglialoro, which produces a smaller fruit than the Pæsano, but it is rich in oil; the Biancolino (white), of which the pulp of the fruit is white; the Pizzuto (pointed), the fruit being somewhat pointed in shape; the Prunaro (plum), the fruit being roundish in form; the Dattio (date), of which the fruit is elongated and oval in form; and the Ferlese, the fruit of which yields a finely-flavored oil, and is excellent for comfits.

The varieties that are preferred for the utility of their product and durability of the trees are the African and Oglialoro. These trees are possessed of great longevity, living to be three and four hundred years old, and continuing to be green, healthy, and productive. The other varieties do not attain so great an age, especially the Ferlese and Biancolino.

A stony or calcareous soil is best for the olive. It must not be planted in damp or clayey ground. Irrigation is not necessary; in fact, it is injurious to the tree. The trees require a loose, dry soil. A hill-side is suitable, provided there is no danger of denudation by water and the soil is supported about the trees by terraces.

The usual method of propagation is to sow the seed, plant suckers, or off-shoots that spring up from the roots of the parent trees, or by grafting the best varieties upon the wild olive stock.

An olive orchard may be commenced from cuttings in the following manner: Prepare the ground by spading to the depth of 3 feet and surround the same by a deep trench. Let the soil thus prepared remain for a time exposed to the sun. Take young vigorous branches

two or three inches in diameter from the kind of tree preferred; cut the same into lengths of about one and a half feet, being careful not to injure the bark. Smear each end of the cutting with stable manure, coating the same with ashes. Then plant the cuttings upright in the soil so that the upper end will be a couple of inches beneath the surface. Care must be taken to plant the cutting the right end up, as upon the tree; otherwise it will not take root.

Many prefer to grow the wild olive from the seed, and when grown to the proper size, graft upon its stock the best varieties. Whichever method is resorted to, the time for planting must be in the latter part of the spring equinox.

The first year after planting, the ground should be frequently hoed; and in the second and subsequent years the rake must be used, that the young roots may acquire strength and vigor in a mellow soil. For the first two years the young plant must not be pruned. The third year it should be pruned, leaving but two branches thereon. During all this time the ground should be hoed and raked frequently. In the fourth year the weaker of the two branches must be removed. After cultivating thus for five years the plants are ready for transplanting to the orchard.

In transplanting to the orchard, a distance of sixty or more feet must be maintained between the trees, where the soil is rich. In poor soil the distance should be thirty or more feet apart.

A year before transplanting to the orchard, the holes for the trees should be dug to the depth of 4 feet. This should be done that the soil of the holes may become fertilized by the rays of the sun. If the trees are to be transplanted in autumn the ground must be dry; if in spring the soil should be fresh and the trees moved before they commence to bud. Prior to planting it is well to mark the position of the plants as to the points of compass, and give them the same position in the orchard.

The young orchard (thus commenced) must be plowed and hoed at least twice a year. After the solstice, when the earth erodes by the heat, care must be taken that the roots of the young trees do not become exposed to the sun. After the autumnal equinox equal care must be had (especially if the orchard be upon a hill-side) that the rains do not denude the roots. Each year the shoots that put forth from the stem must be removed. Every third year the ground about the trees should be manured, the amount to be determined by the condition of the soil.

It is often the case that even in dry situations a moss gathers upon the trees. When this occurs the moss must be removed by scraping. Dregs of the oil should be smeared upon the trunks of the less vigorous trees. This will destroy the insects that infest the bark and thus injure the trees.

After the lapse of eight years the trees must be thoroughly pruned; cutting away all sprouts, and such branches as obstruct the air and sun-light; but no large branch should be cut near the body of the tree; and the lower branches should be spared, because being more exposed to the warmth they are the most productive.

At eight years old the olive is but a mere infant tree. At fifteen years of age it bears but little fruit. When thirty-five or forty years old it begins to bear abundantly, but then only every other year. Every alternate year there is generally a poor crop. At this age a hectare ($2\frac{471}{1000}$ acres) of trees in the fruittul year generally yields from 3 to 4 quintals metrique (660 to 668 pounds) of olives, or about 240 or 320 kilograms (530 to 705 pounds) of oil.

When the trees are fully grown the ground should be plowed at in-

ervals during the year, and should be once hoed during the autumn. The cost of this per annum, including the pruning and cleaning of the trees, is about 100 to 130 lire ($19.80 to $25.09) per hectare ($2\frac{474}{1000}$).

For oil the fruit should be gathered when it commences to change color from gray to dark red. The fruit must be picked by hand, not knocked off with poles, and care taken not to bruise it. If bruised or injured in any way it soon becomes rotten, and the oil from it is of poor quality. As soon as gathered the oil should at once be compressed from the fruit. In Sicily there are mills for this purpose. The fruit is placed between two stones and the stones forced together by screw power. It spoils the fruit to let it lie in heaps in a store-house before extracting the oil. The oil as soon as extracted is placed in large jars. The jars should be thoroughly cleaned with vinegar and water before receiving the oil. When the jars have been filled with the oil, they are placed in rooms where the temperature is kept about 15° above zero (Réaumar), (or Fahrenheit about 50° above zero). In the month of June following, as soon as the oil becomes clear (impurities settling to the bottom) the upper strata of oil (the clearest) in the jars must be poured off into other jars, the cloudy or poorer quality remaining. This oil is the first grade or best quality. In a month after this process is repeated, the turned-off oil being second grade or quality. After the lapse of another month the process is again repeated, giving an oil of third quality. The dregs are now left in the first jars, and are here used for making soap, rubbing on the bark of sickly young trees, &c.

For export the olives must be gathered by hand in the month of December, when they are of a green or whitish green color, according to the kind of fruit. The fruit is then placed in barrels or large jars and covered with a strong brine. In this condition the fruit is exported. The brine is thus prepared: into a barrel or tub is poured fresh, clean water until it is three-fourths full; over this is hung a basket filled with coarse salt, the bottom of the basket being three or four inches beneath the surface of the water. When the water becomes completely impregnated, and will hold no more salt in solution, it is ready for use.

Black olives for condiments are thus prepared. They must be gathered by hand when they begin to ripen and commence to turn black. They must not be fully ripe. When gathered they are cleaned and salted in baskets. The proportion of fruit and salt is about a large handful of coarse salt to a gallon of the fruit. Coarse salt is first spread in the bottom of the basket, then a layer of fruit, then of salt, and so alternately until the basket is full. In this condition the fruit must remain a month, then with fresh water cleanse the fruit from the salt, and place it in clean jars covering the surface with laurel leaves.

Another method of preparing the black olive for table use is thus: As above the olives must be picked when they commence to lose their green color, becoming somewhat dark. Place the fruit in shallow baskets in the shade, letting it remain thus for a day. Then close the fruit in jars for twenty-four hours. Then salt the fruit in jars, scattering upon each layer of the fruit two handsful of fine salt to a gallon of the olives. Some hours afterwards when the fruit is impregnated with the salt, remove it to other jars, pouring upon it a copious supply of olive oil of the first quality that is pleasant to the taste. Cover the surface with laurel leaves.

FIGS.

Of the fig tree there are several varieties, some yield a large fruit, others small. The fruit also varies in its degree of sweetness; also in

color from white to black. The fruit of some varieties ripen sooner than that of others. The trees grow well in poor or rich soil, and bear abundantly in our mild climate (mountain side, if not too high), or hot climate (of the valleys). The soil for the fig must be dry. It will not flourish in wet ground.

The favorite varieties here are the Sangiovannaro, the Sottuno, the Melinciano, and the Ottato. The Ottato has smooth leaves; the peduncle of the flower and fruit is longer, and the fruit is sweeter than of other varieties. The fruit of the Ottato is best for drying.

The fig is here propagated from the suckers that spring up from the roots; cuttings from the tree also are used in propagation. Cuttings in this climate should be set in the months of February and March. In orchards the distance to be maintained between the trees is 8 meters (26 feet). The fig is long-lived, because it is constantly being renewed by shoots that put up from the roots taking the place of the main trunk when it becomes old and decayed. The soil must be worked in the spring, also in November following. The best varieties are grafted, also budded upon the stock of the wild fig. Grafting and budding are also done upon healthy trees of the best varieties. The time for pruning is in March, or when in blossom in June. All dead and diseased branches should be cut away. But little pruning is necessary. Too much is injurious.

Figs here are dried in the following manner: The fruit must be gathered when partially ripe. It must not be what is termed "dead ripe;" in other words, it must be more green than ripe. When gathered give the fruit a plunge bath in boiling water, removing them from the water quickly. Then place the fruit in a shady place. The next morning at sun-rise spread the same upon a platform (not upon the ground, because of its dampness), that it may be flooded with sun-light. Here shallow willow-work baskets are used for holding the fruit while drying. These are never placed upon the ground, but in an elevated position. At going down of the sun the fruit must be covered to protect it from the night dews or unexpected showers of rain. Continue thus for several days until the fruit becomes dry.

When dry place the fruit in layers in small boxes or baskets, artistically and neatly arranging the same. Press the fruit down firmly by hand, and continue the layers of fruit until the vessel is full. The boxes (or baskets) must be securely covered and kept in a dry place.

The culture of the fig is not a specialty in this part of Sicily; but little of the fruit is exported from this district and none from Catania to the United States.

The raisin grape is not cultivated here. The grapes grown in this part are manufactured into wine.

For the information given on the culture of the olive and fig, I am indebted to our respected consular agent, Mr. N. Stella, of Syracuse. The foregoing statements about the olive and fig are almost a literal rendering of his excellent Italian letter addressed to me on this subject. Mr. Stella has represented the United States at Syracuse for thirty-nine years past. He is certainly a veteran.

ALBERT WOODCOCK,
Consul.

UNITED STATES CONSULATE,
Catania, May 21, 1884.

FRUIT CULTURE IN TUSCANY.

REPORT BY CONSUL WELSH, OF FLORENCE.

I have the honor to hand you my reply to the circular issued by the epartment of State, under date of the 4th of December, 1883, and re-ived at this consulate on the 23d of January, 1884.

I regret the delay, which has been unavoidable, and in this connection may mention that the answer from the consular agency at Cagliari, ardinia, reached me on the 15th instant, and, that although vines and ives are grown to a large extent in this district, there are scarcely ıy exports of the same made through this consulate. I have, therefore, ad much difficulty in arriving at the information I am able to give.

OLIVES AND OLIVE TREES.

Olive trees are adapted to few countries, being so delicate that they ın thrive under the influence of a mild temperature only. Cold winds nd a soil too fresh or too dry are equally unfavorable to their produc-veness. Therefore, on the Mediterranean coasts, and nominally in Italy, seems that olive trees meet with most of the conditions favorable to ıeir development. Olive trees in a favorable climate and soil grow uickly, and are both strong and leafy.

In Tuscany the diameter of the trunk measures from 0.25 meters to .30 and 0.42 meters (9½ inches, 11½ inches, 1 foot 4½ inches). The or-inary height of the tree when fully developed is from 5 to 7 meters 16 feet to 22 feet 7 inches), and the maximum and exceptional height is ·om 8 to 12 meters (25½ feet to 38 feet).

It is difficult to state the length of life and productiveness of olive ·ees. In the most favorable countries, however, they remain fruitful ıring two hundred or three hundred years, and, if after this term of fe they do not bear, young shoots are produced by them which become ·uitful, so that actually, when properly tended, they may be said never) die.

Among the olive trees the following are the better known in Tuscany:

Infrantoio (fit for the press), one of the most delicate and very sus-eptible to cold.

Olivastro (dark brown olive), found on the hills; hardy, but not very ıroductive.

Moraiolo (resembling the mulberry), hardy, ripening early, and fairly ıroductive.

Razzo or *Grossaio* (large and lucent), much appreciated for the abund-ınce and size of its olives and the good quality of its oil.

Coreggiolo (resembling the crucible from its lowering branches), sus-ıeptible to cold weather, and consequently not adapted to high localities, ıut still growing with northern exposure.

Gremignolo (a coarse description of olive), ripening in March or April, ınd found in the Pisan Mountains.

Leccino (holm-oak), coarser, but very hardy, and not susceptible to ıold.

Quercetano (resembling the oak), deriving its name from Querceta, a mall place in the Lucchese, where it is largely cultivated, owing to its trong constitution and resistance to sea winds.

Indolcitoio (tender and sweet), whose fruit, larger than other varieties, but with little oil, is eaten fresh after having been for some time well soaked.

The varieties mostly used in Tuscany are the—

Infrantoio, with favorable exposure, and the *Moraiolo* elsewhere. The *Infrantoio* grows well in sheltered places and on hillocks. This plant is very susceptible to exposure to or changes of weather. The *Moraiolo*, cultivated in a meager and arid soil, is very hardy and bears well.

Olive trees are generally reproduced from ligneous excrescences of the stock or roots, in the form of a half an egg, from which they are called *uovoli*, cut in the spring, placed in holes made in a plowed soil, covered with fine earth and watered according to the exigencies of the season. The *uovolo* sends forth shoots, the most robust of which are brought up, and in the third year of their existence may be planted. The reproduction by seed is not exclusive, however. Small plants are cared for in a nursery and grafted on in the third year, and in the fourth are transplanted. Olive trees are planted in square ditches of over 2 meters (6 feet 5½ inches) and at a depth of about one meter (3 feet 3 inches), with proper arrangement for drainage.

Olive trees commence to bear one year after being planted, and farmers anticipate the amount and increase of the crop from the date thereof, relying upon the Tuscan sayings, viz:

Se mignola d' Aprile, vacci col barile (bearing in April, look for a barrelful; abundant crop.)

Se mignola di Maggio, vacci col saggio (bearing in May, hope for the best; scarce crop).

Se mignoli di Giugno, vacci col pugno, (bearing in June, expect a handful; poor crop); which are confirmed by the following:

La prima oliva é oro (the first olive is gold).

La seconda argento (the second is silver).

La terza val niente (the third is of no value).

That is to say that the tree precocious in its bearing produces best; less sure are those flourishing later, and the produce of those bearing last is of little or no value.

In well-disposed orchards olive trees are planted at a distance of from 4 to 6 meters (13 to 19 feet 4 inches) one from the other. The number of trees is generally from 400 to 600 per hectare (2½ acres).

Pruning in the best-conducted orchards consists in well clearing out the center of the tree in order that all the branches bearing may have plenty of light, sun, and air. The trees are pruned every two or three years. Any dying or dead branches are taken off as soon as noticed. Every year the soil is turned with the spade and every other year manured. It is thought by scientists that pruning is carried to too great an extent. Columella, the ancient agriculturist, who greatly advanced oil culture, says of this plant that "the plowing of ground is a request, the manuring is a prayer, and the pruning is an order to produce fruit."

The best orchards in the Lucchese may produce each two years 180 hectoliters (510 bushels) of olives per hectare (2½ acres), from which quantity there can be had 2,160 kilograms of oil (4,761.33 pounds), or about 24½ hectoliters (646 gallons).

It is calculated that one hectoliter (2.83 bushels) of olives gives 12 kilograms of oil (26½ pounds), and Domenico Capponi, in his treatise on olive oils, considers fairly remunerative the production of from 10 to 15 kilograms (22 to 33 pounds) per hectoliter of olives (2.83 bushels).

The average biennial product is estimated at 120 hectoliters per hec-

tare (340½ bushels, 2½ acres), equal to 1,440 kilograms of oil (3,174.62 pounds), or about 16⅓ hectoliters (430 gallons). The olive tree in Tuscany produces an average of 1.188 kilograms oil (2 pounds) per year. Such results, however, are given, but in good years and considering the fluctuation of the product, the biennial average is reduced to 11 hectoliters (290 gallons) of oil per hectare (2½ acres), at the price of 136 lire ($27.20) per hectoliter (26.417 gallons), as being the average price for the last six years, giving the gross amount of 748 lire per annum. To that is added the value of olive husks, from 1 lire to 2.50 lire per quintal, and of fagots derived from the pruning, which amount to 64 lire every two years, making a gross amount of 780 lire per hectare and per year ($156 from 2½ acres).

The following statement will show about the expenses of working a hectare of olive trees and the approximate net receipts, calculating for one instead of two years:

	Lire.
Working the ground	20 00
Pruning	36 00
Manuring	300 00
Plucking olives	40 00
Pressing olives	7 20
Interest at 5 per cent. per annum	20 20
	423 90

Which, deducted from the gross amount of 780 lire, leaves 356.10 lire net.

It is generally calculated that the expenses of an orchard represent one-third of the actual value of the produce, and that estimate is made as an average. The expenses, however, exceed by far said figure, as the above estimate shows. The olive culture is sometimes managed by what is called *mezzeria*, or a system when half the *net* profits are paid to laborers, all the expense but that of pressing the olives being borne by the owner.

Tuscan oils from Lucca, Calci, and Buti are esteemed as the first oils of the world. Not all Tuscan oils, however, reach that degree of perfection, but even judging in mass, they are considered the best. For twenty years past Tuscany has not produced oil for burning or for lubrication, all attention being given to the production of salad and cooking oils.

In some places hot water is used to facilitate the pressing. The best rules adopted for extracting oil are the following, viz:

(1.) To expedite the careful gathering of olives already fallen from the tree.

(2.) To harvest the olives as soon as ripe, plucking the fruit by hand or whipping the trees gently.

(3.) To press olives before fermentation and to dispose them in small strata in the baskets.

(4.) To press slowly and at a cold temperature.

(5.) To have all machinery and recipients very clean, as well as to insist on the cleanliness of the laborer. Crushing presses of old system are used, and the quantity of olives submitted to each pressure varies from 150 to 250 liters (4½ to 7 bushels), but not over.

Olives must be well pressed and ground for about one hour, after which they are reduced to a paste and placed in frails, submitted to presses, and then mixed with cold water for a second pressure, and even a third pressure, but with hot water in that case. The oil produced by a first gentle pressure is the *virgin oil;* the other is mixed, and constitutes a second quality, usually called *olio mangiable* (table oil); a third quality is derived from the deposit of oil, and used by colonists for burning.

Olive oil is preserved in jars varnished inside, containing from 50 to 300 liters and over (13.200 to 79.251 gallons). Olive husks crushed and pressed again give an inferior oil for lubricating purposes. The clarification of oil must not be too cold nor too hot. The temperature is not to vary from 10° to 12° centigrade (54° Fahr.), in order that the oil fluid be such as to facilitate the deposit of heterogeneous substances.

The process of preparing olives for table use consists in their sweetening or drying; those green are sweetened, and the ripe olives are dried. To sweeten they are placed in clean water during five or six days, changing the water four or five times a day. When they have lost their bitterness they are transferred into a pitcher of brine with a few branches of fennel, taking care to keep them well plunged in. After sixty days they are good for table use and are so preserved until the following year. They can be sooner prepared for table use by crushing, extracting the nut and keeping the fruit moist for four or five days and changing the water four or five times a day. They are then placed in brine, and after six or eight days may be eaten alone, or with vinegar and oil, according to taste. Olives can also be sweetened by keeping them in brine until they lose their bitterness, after which they are placed in water renewed twice or three times a day for four or five days until they lose their disagreeable taste. Then they are kept in brine, adding thereto fennel, cloves, cinnamon, or nutmeg, but the fennel if used must be used alone. Dark olives are dried by exposure to the sun for from fifteen to twenty days, and are subjected to a slight sprinkling of salt.

Another process is to place the fruit in baskets with alternate layers of salt. In the course of twenty-four hours the juice will commence to leave the fruit and after five or six days the fruit is sufficiently dry for table use. Day by day the baskets should be gently shaken and a little salt sprinkled on.

Olives for oil are to be picked when thoroughly ripe, which is clearly shown by the bright black color, and also by the fact that at such time their pulp is easily severed from the nut and has a violet color. Its compounds are:

Pulp	56.02
Water	14.38
Skin	9.38
Nut	20.16
Oil from the nut	.06
Total	100.00

From experiments made it results that one hectoliter (2.83 bushels) contains from 48,000 to 50,000 olives, the difference being ascribed to the variety, according to soil, climate, and season. Olives accumulated for some weeks might number 54,000 or 56,000 per hectoliter (2.83 bushels.)

The "queen olives of commerce" are considered in Tuscany as the selected fruit of the common olive.

There is no system of artificial irrigation in use for olive culture in Tuscany.

The annual rain-fall in this district is about 1.067^{mm} equal to about 42 inches.

Official statistics show that the following countries import olive oil from Italy, ranking in importance as to quantity of oil as named: France, England, Austria, Russia, South America, United States, Netherlands, Turkey, Sweden and Norway, Denmark, Portugal, Belgium, Greece,

Switzerland, Egypt, Brazil, Algiers, &c. Barrels, bottles, or tin cans are used to hold the oil.

In Tuscany there are three prevailing diseases which seriously affect the olive tree, viz:

Lupa, meaning literally wolf, but actually being a description of dead rot, produced very often by excessive pruning. To cure this the affected parts are gouged out and a hardening liquid preparation applied that the circulation of sap may continue.

Mosca dell olivo (the olive fly).—This insect lays its eggs on the olive itself, and when the deposit is discovered the olives are gathered immediately. Should the eggs be allowed to remain the fruit is much deteriorated, if not ruined. The eggs are red, and therefore easily discovered.

Bruco dell olivo (the olive grub).—This insect is the most dangerous enemy to the olive tree here, consuming the sap and thereby drying up branches and buds. When discovered the tree must be thoroughly pruned, all the foliage removed, and every portion containing the insect burned or buried away from the plantation.

ZONE FOR THE CULTURE OF OLIVE TREE.

The zone in which the *Oliva Europœa* is most appreciated and its culture most remunerative is on the shores of the Mediterranean. The olive tree does not thrive with extremes of temperature; a climate too hot and dry, or too cold and moist, is not favorable to its culture. It thrives well on the sea-coast or on the hillside, producing buds in March, at a temperature of 10.50° or 11° centigrade (52° Fahr.), blossoming in April at 15° centigrade, flourishing in May at 18° centigrade, and forming the fruit in June, at 21° centigrade.

The lowest winter temperature supported without damage is 7° or 8° centigrade; but this temperature cannot be withstood any length of time, indeed not over a week.

OLIVE CLIMATE.

(*a.*) The minimum of the temperature should be 7° or 8° centigrade, and that not to exceed eight days.

(*b.*) Snow five or six times per year, and the snow to not last more than two or three days at a time. Over that would undoubtedly injure the tree.

(*c.*) Olives should commence to ripen before the end of October, and the average temperature should not be lower than 16° centigrade.

(*d.*) The months of June, July, and August should be dry to render the olive healthy.

From 25^{mm} to 30^{mm} (1 inch) of rain is necessary before June, supposing the previous winter to have been a fairly wet one.

Districts.	Latitude.	Altitude.	Maximum.	Minimum.
	°	*Feet.*	°	°
Florence	43 47	72.0	*39.5	†11.
Pisa	43 48	8.0	35.5	9.5
Sienna	43 20	348.5	36.2	8.5

* Extreme heat known in summer at Florence; actually the thermometer seldom rises over 30° Cent. or 86° Fahr.

† This degree of cold is very rarely felt. The thermometer at Florence during the winter *very* seldom falls lower than 5° Cent. or 25° Fahr.

EXPORT OF OLIVE OIL.

I have now given the method of making pure olive oil, but it is to be regretted that no pure oil is exported from Italy. The cotton-seed oil is made and imported in large quantities for mixing with the olive, thus giving to the dealer a larger profit than he would receive from the pure oil. Twenty-five per cent. of the liquid exported is composed of cotton-seed oil, and the mixture sometimes contains as much as 50 per cent.

My dispatch No. 23, dated May 2, 1883, gives an easy method of discovering the presence of the adulterating liquid.* The cotton-seed oil is not unhealthy, but simply detracts from the flavor of the pure article.

VINE CULTURE.

To the cultivation of oranges, lemons, and figs little or no attention is given in Tuscany. More attention is paid in Tuscany to vine culture than to that of olives, inasmuch as the grape-vine is less delicate, and withstands better the severity of climate and variety of soil. Excepting in some mountainous regions, it may be said that the grape is cultivated all over Tuscany.

To enumerate the different vines of Tuscany would take up too much space. For the province of Florence alone there are about 150 different varieties grown, of which two-thirds (or 100) produce raisins and grapes for table use, and, with the others, the grapes are made into wine.

The systems of cultivation are not less numerous than the varieties of vines. There are vines disposed in the the French system, trained low and in rows, at a meter (3 feet 3 inches) distance one from the other, supported by iron wire or stakes; low vines placed in rows on the edges of fields; vines stretched between maple trees, elm trees, or poplar trees; low vines in rows over the trees, and in the neighborhood of Pistoia and Lucca many vine arbors.

Vines are reproduced sometimes with sprigs, but generally by shoots left free for two years in the ground, which should be well dug at the commencement and end of each summer. The third year the shoots are dressed and the most vigorous selected. Two or three years later the vines are affixed to stakes and the year following the grapes appear. Ditches measuring 1.20 meters (4 feet) in width and depth are dug for planting vines at a distance varying from 60 to 70 centimeters (2 feet) for rows with low vines, the distance being less on the hillside than in the plains.

At Val di Nievole, in the middle of a field surrounded by vines, a

* The test of Prof. Commendatore Bechi, director of the Technical Institute and of the Agrarian School, is as follows:

In a glass bulb place 5 cubic centimeters of the olive oil to be tested; add to this 25 cubic centimeters of alcohol of 98° areometer. Then add 5 cubic centimeters of the test, which is composed thus: One gram of crystallized nitrate of silver dissolved in 100 cubic centimeters of alcohol 98° areometer. The bulb containing the matter just described is then placed in water, the temperature of which must be brought to 84° centigrade (151° Fahrenheit). After half an hour's immersion, the oil, if impure, becomes of a dark, muddy color, and with practice and caution the actual proportion of the adulterating liquid can be determined.

Another method is to place 5 centimeters of the oil in a bulb and add thereto 30 centimeters of alcohol 98°. Shake the mixture thoroughly, and then let it rest until the oil and alcohol separate. Then transfer the alcohol to another glass bulb and add the test (same quantity as before). Put the bulb in the bath and heat the water to the same grade (84° centigrade or 151° Fahrenheit), when, if the oil is impure, a distinct dark color will be produced. This test is based on the essential quality possessed by the glyceride of the cotton oil to reduce the nitrate of silver. It is always well to also use the test with pure olive oil, when, if the oil be thoroughly pure, no discoloration will be observed.

row of mulberry trees is always to be found, and on the sea-coasts of the Lucchese olive trees are to be seen along the edges and rows of vines in the interior of the fields. Olives and vines are often grown together.

The pruning of the vine is done before or after winter. For vines united to trees, two systems of pruning are in use, viz, *piegatoio*, or *tralciaia*, and *penzana*, or *catena*. The former is the most common, and consists in twisting two vigorous shoots, to which twenty or more cuts have been made, and tied to a supporting branch with the extremity turned down. For the latter the shoots are preserved much longer, twisted with another vine and supported by another stake. Low vines are usually pruned on the system "cornetto," viz, with two, three, or four cuts, according to the variety, and while growing they require the taking off of the tops of the shoots, they being tied to a stake whenever they are 50 or 60 centimeters (1 foot 8 inches or 2 feet) long, and tied again when they have reached the height of the stake; and finally twisting the extremities of one vine with another, so as to make an arch, which last operation is made when the grape is already completely formed. In the vineyards managed according to the French system the soil is spaded in the spring, and also in August, and each year well manured. The vine thrives throughout all Italy needing a sunny exposure in Northern Italy, while in the middle and the south it thrives equally well in valley, table, or hill-side lands, but prefers a rough soil, far from moist or foggy localities, and avoiding ground excessively compact or clayey. Stony soil, if sufficiently watered, is well adapted to vine culture.

WM. L. WELSH,
Consul.

UNITED STATES CONSULATE,
Florence, March 17, 1884.

FRUIT CULTURE IN VENETIA.

REPORT BY CONSUL NOYES.

CLIMATE AND FRUIT-GROWING IN ITALY.

While it is true that the soil and climate of Venice seem specially favorable to the fruit of southern regions, and while in fact almost every species of such fruit may be produced in some specially favored spot of its territory, even the palm tree flourishing unsheltered at certain well-known points of the Riviera, yet this is far from being a tropical country; and when it is remembered that Naples has almost exactly the latitude of New York, that Venice lies farther north than Halifax and nearly on a line with Mackinaw, regions where fruit-culture of any kind is rather precarious than otherwise, it will be evident that with all allowance for the isothermic variations of the two continents, the success of such semi-tropical fruits as oranges, lemons, and olives must always be partial, and dependent rather on exceptional advantages of situation than on the normal conditions of the country and climate.

That vegetation so foreign to the latitude should find a congenial home in Italy is mainly due to the topographical peculiarities of the region, as is proved by the abrupt transition in crossing the Adriatic to the inhospitable climate of the Balkans. The semicircle of the Alps, shutting out the vicissitudes of temperature caused by the action of

frost and thaw on the plains of Northern Europe, leaves these narrow shores only open to the genial rays of the southern sun, and to winds charged with the heat of Africa and the moisture of the intervening sea. The influence of these exceptionally favorable conditions is strikingly illustrated by the fact that while the orange and lemon are in their natural element only in Sicily, the point where, after Gibraltar, Europe approaches nearest the coast of Africa, yet, strangely enough, the only other locality where their production becomes a profitable industry is found at the northern extremity of the kingdom and almost in the heart of the Alps. All travelers are familiar with the olive plantations of Northern Tuscany and the Riviera of Genoa. The oil of Lucca is proverbial for its excellence, due evidently, with the prosperity of all this favored region, to the redoubled barrier of the Apennines, a protection not only from the rude climate of Northern Europe, but from the chilly influence of the Alpine snows as well, maintaining here perpetual spring even when winter reigns on their sheltering heights.

VINE-GROWING IN VENETIA.

The vine, on the contrary, thrives anywhere with the luxuriance of a native product, finding all its requirements satisfied by the relative warmth which barely suffices for more sensitive plants, and finding, besides, in the volcanic origin of much of the Italian soil the elements best suited to nourish its vigorous growth. This natural adaptation, and the extreme facility with which it lends itself to every situation and every mode of treatment, have, by allowing the persistence of antiquated methods of cultivation, almost as effectually as the difficulty of succeeding with the more exotic plant, maintained the present imperfect and unsatisfactory state of the industry. Until very recently no efforts have been made to improve the stock of vines or the appliances and processes for the manufacture of wine, and no standard types exist to fix any permanent character for the one or the other. The plants change their nature and name as they change their locality; the same product bearing different names, or the same name applying to different varieties in neighboring regions, while the quality of the wine depends on the accidents of the season and the chances of unintelligent manipulation. Including all the slight variations caused by climate and situation, and known only by their rustic names, some 125 varieties of red and 70 of white, grapes are counted in the territory, mostly belonging to the species *Vitis vinifera*, a few to the *Vitis silvestris*.

ISLAND AND LAGOON VINEYARDS.

Of these several of the sweeter and more delicate kinds, cultivated on the Lido and islands of the lagoon, are abundant in the market of Venice; but this very abundance and cheapness would make it seem here an idle superfluity to prepare them as conserves for commerce, and nothing of the kind is thought of. Besides that, being the lightest and least alcoholic of Italian grapes, it is doubtful whether they possess the strength and flavor desirable for the purpose.

The existence of these vineyards, surrounded by the sea, and often so low-lying that they must be defended from the invasion of unusually high tides, as well as the abundance and excellence of their product, is sufficient assurance that the situation causes them no prejudice. It seems, however, to deprive them of the vigorous flavor necessary to a good wine-grape; and for the small quantity of wine fabricated at Venice

s generally used the fruit of the neighboring mainland. For this pur-
ose the hillside growth has a traditional superiority well established
ere, as in all vine-growing countries.

The plants employed in these island vineyards are none other than
he choicer varieties common to the surrounding country. The *Marze-
nena* or *Lugliatico* (the Balsamina of the Romans) is a vine of medium
growth and extension, the leaves indented to one-third of their width,
with branches of moderate size, and grapes quite round, deep-colored,
nd extremely sweet. Inland it thrives best in the valleys and along
he foot of the hills, and is used to color and sweeten the finest wines,
ut is too poor in tannin and salts to suffice alone. The *Piguola* (*Pig-
iola rossa* of Tuscany), much resembling the above, but more robust in
lavor, is prized in mixtures for its large proportion of salts. The *Ver-
tiso* and *Bianchetto* are the commonest of white grapes throughout North-
ern Italy, and need no description. Besides these varieties, evidently
f the ordinary stock, the *red* and *white Muscadel* are abundant, with
arger and more oval fruit, of a decided musky flavor, called the *Fragola*
strawberry) grape by the Venetians, and a certain quantity of the
mall, deep-colored fruit of the wild species, in long, close bunches, with
he pungent sweetness everywhere familiar.

The absence of trees and want of space on the diminutive islands
where these grapes are grown have made close cultivation a necessity.
The vines are planted 4 and 5 feet from each other, in rows about 3
ards apart, and trained on gratings of lattice, slanted from about 5 feet
inches, the height of a man, to within 2½ feet of the ground, or else
n upright espaliers or trellises around the inclosures or on the banks
f the numerous canals and ditches which intersect these amphibious
gardens in every direction. The plants are tended with the care and
ttention of the market gardener, and so far have been free from all
he prevalent diseases of the vine.

The nature of the climate is a sufficient guarantee against any risk
f injury to the fruit from sea-fogs and mists, the long summer heats
nd frequent droughts being the dangers most to be apprehended, and
ften compromising the success of crops of every kind. Fogs are rare
t all times, and during the season of vegetation absolutely unknown,
while the ordinary evening mist from the water does not prevail till late
n autumn, when the sun, sinking early toward the horizon, loses some-
what of its dissipating power. The rare wet seasons cause an occa-
sional falling off by preventing the full maturity of the grapes, but the
permanent enemy is drought, which the vine certainly fears less than
many other plants.

VINEYARDS ON THE MAINLAND.

On the mainland the plant is far from receiving the same careful and
rational treatment. Every traveler has been charmed with the grace-
ful luxuriance of the vine-mantled trees which border the routes of
Northern Italy with their interminable festoons, and overrun the coun-
try, making it an ideal picture of exuberant vegetation, but an example
of the worst possible farming, say the specialists. From time immemo-
rial the Venetian cultivator has imitated the simple arrangement of
nature in marrying the vine to its primitive support, and the best proof
of the inexhaustible fertility of the region is the fact that with such a
system he succeeds in producing delicious grapes and passable wine.
Efforts are made to introduce vineyard culture, but the want of capital
or impatience for hasty gain still prevails, and in the Valpolicella dis-

trict of Verona, where the choicest of Venetian wine is made, the old system is universal, while in Conegliano some of the new plantations commenced under the auspices of the school there have been torn up, and the number of vineyards has rather diminished during the past ten years. The practice is the same for fruit or wine grapes, and the same varieties serve indifferently for both.

In this double cultivation the sustaining trees are planted some time previously, with the same regularity as the vines, from 3 to 10 yards from each other, and in rows from 10 to 30 yards apart, according to soil and situation, much deeper if possible, also, to avoid the interference of their roots as well as to lessen the drain on the soil to the prejudice of the vines. The ash, maple, and cherry are generally preferred for the purpose, as less impervious to the sun, on the hill; the maple, elm, and poplar in the plain. After reaching the height of 6 feet, all the vigor of the young tree is confined by pruning it to three or four of its most robust branches.

PLANTING AND CULTIVATING THE VINES.

The vine (and the methods of cultivation are given here with some detail, as they are the same substantially for all sorts of vines and in all parts of the territory) is reproduced from slips (*magliuoli*) carefully chosen from the best individuals, well furnished with buds, and cut near the middle of the bearing trunk with a small portion of the wood attached. Before planting, these slips are subjected to a sort of maceration, exposed to the sun with their lower ends immersed in running water. This softening process predisposes them to take root and bud more promptly. They are then planted by some cultivators in a nursery for two or three years, but most generally on their permanent locality, to allow the young vine to adapt itself at once to the soil in which it is to grow. The furrow is commonly 2 or 3 yards wide and half a yard deep, shallower in light and loose earth, but a compact or clayey soil should be broken as deeply as possible. At the bottom are often placed large stones or fascines of osier, a sort of rough sewerage to aid a freer circulation of air and moisture. On rocky hillsides it is also a means of economizing the scanty supply of vegetable earth. These furrows should be opened and well broken up some time beforehand, in autumn if possible, since the soil gains in quality by the action of air, sun, and frost.

The planting takes place with the opening of spring—from the middle of February to the 1st of April. The slips are placed four or five on each side and at 9 inches to 1 foot from the tree, disposing them in the best position to take root easily, and covering lightly at first with fresh soil and manure or vegetable refuse, to be filled up afterward with earth improved by exposure, according to the progress of the season, till the surface is leveled or the plant properly imbedded; rapidly in the plain, more gradually on the hillside, where the spring rains would soon wash away the unsolid mass, while on the contrary the cavity, aided by a little support of stones below, retains and profits by whatever they may bring from above.

The choicest and best cultivated vines of the region, those of the Valpolicella, often require to be terraced thus with a succession of sustaining walls, and are in such localities so closely planted that in a few years the tendrils are festooned not only from plant to plant but from row to row—a thing never permitted in the plain, where this cross-festooning would obstruct plowing for other crops in the intervening spaces.

Generally both the vine and its support are pruned low and only allowed to spread horizontally, the vine, as it extends beyond its sustaining limbs, being led over their forks and left pendent till long enough to be attached by its extremities to those of a neighboring plant; more rarely bound to upper limbs it mounts to the height of the tree, since at a certain distance from the earth it loses its vigor and sterilizes. At Valpolicella, the sustaining plant, after reaching the necessary size and force, is often killed, that it may no longer rob the vine of its nutriment.

During the earlier period of its growth the vine is pruned rigorously to confine its vigor to the portion by which it attaches itself to the tree, lopping all but the clinging tendrils. Afterward the practice is to retrench the higher shoots and force it to bear as low as possible, removing at the same time those which have borne for one or more years, the better to re-enforce those intended to bear the succeeding year. According to treatment and situation, the vine begins to give a profitable crop at from three to six years.

VARIETIES OF GRAPE.

Of the 200 or more indistinct varieties, confusedly attributed to the various districts of the territory, not more than 25 are cultivated to any extent or furnish a product of commercial value.

The principal of these for the district of Verona, the base and substance of its most generous wine, is the *Corvina*, a close-growing vine, whose branches, with little tendency to spread, are thickly budded and bear an unusual abundance of rather small fruit in pyramid-shaped clusters. This grape is specially rich in all the elements for vinification, saccharine, saline, coloring, and tannic, and is at its best along the bases of the hills and in the upper valleys. On higher ground it changes its character somewhat, with lighter and longer branches; the fruit is less crowded and abundant, extremely sweet, and delicious for table use. As a rule, the red varieties succeed better on the hillside, the white in the valley, and the same plant removed to a higher level changes more or less, the fruit becoming rarer and smaller, but more concentrated in quality, while both it and the stems take a deeper color. This alteration the cultivators call "*ingentilire*." The Corvina is the only grape capable of producing superior wine alone and without mixture, though to heighten its excellent qualities it generally figures only for 45 to 50 per cent. in the best fabrication.

Next in value is the *Terodola*, a plant more spreading than the above, with deeply serrated leaves, small but well-furnished bunches of round, thick-skinned, and very black grapes; affects the same localities with the Corvina, and makes strong, high-flavored wine, improved by mixture with the last named and others, where it serves best in the proportion of 20 per cent.

After these superlative products come the *Rossignola*, choice, also, but very delicate; thrives only in the best exposures, always the first attacked by epidemics, and requires constant sulphuration.

The *Schiavo*, a strong-limbed and vigorous plant, abounding with fruit; only tolerable for wine, but excellent for the table.

The *Lambrusca* grows wild in Tuscany; improved by culture and properly qualified by mixture gives superior wine; and the *Marzemina*, indifferent for wine, delicious for eating.

Among white varieties, the *Bigolona* and *Durassena*, gathered extremely ripe and concentrated by drying, both make an exquisite des-

sert wine, the *Vino Santo*, so called because the grapes may be kept, and sometimes are not brought to press till Holy Week.

The *Montenara* and *Torbiana* are preserved more exclusively for the table during the winter.

Most of the white varieties may be kept and improve in flavor by drying till the approach of spring. For this purpose the clusters are laid on a grating or hung from the ceiling in a well aired situation—a process as old and as well-known as the grape itself.

It is hardly necessary to make special mention of the grape cultivation in other parts of the territory, where the same varieties in less favorable conditions are produced with less perfection. The whole range of country along the foot of the Alps is fertile in abundant and excellent fruit.

At Conegliano, to the north of Venice, as mentioned in my last annual report, the soil and situation are exceptionally well adapted for the culture, and a school has been established, aided by state and provincial subvention, for promoting more rational and efficient methods. The soil here is the most decidedly calcareous to be found in the territory, derived from the disaggregation of the masses of dolomite and oolithic limestone of the mountains above, and from extensive beds of marl lower down, largely mixed with fragments of the underlying porphyry, quartz, and granite. Where this soil rests on strata of loose conglomerate, as is generally the case here, the vine finds a congenial situation.

Here, to the contrary of Verona, the white wines succeed best. The *Verdiso* and *Bianchetto* have much local reputation, and, properly manipulated, make a good foaming wine of unusual body and flavor. The *Prosecco*, *Pignola*, and *Baschero* are also excellent, and are largely consumed in Venice and the surrounding country, though their want of alcoholic force prevents exportation to any great extent.

The red wines of the *Rabosa* and *Schéavo* are also a permanent staple in the consumption of the eastern part of the territory, and all are excellent for table use, being cultivated along with others for the exclusive purpose.

In proceeding westward the soil, with the constant predominance of the calcareous element, but with a larger admixture of scoriæ and volcanic matter, lends itself to the production of stronger and richer qualities both of fruit and wine. This is particularly the case in the extreme westward districts of the territory, where the hills of Verona are almost exclusively composed of the detritus of Cretaceous strata, mingled with quartz and the disaggregation of basalt and friable basaltic tufa. The vine prospers everywhere, varying with the differences of the region; sweet but light and watery on the limestone of the plain; deep-colored, strong, and aromatic on the basaltic hills to the east; rough and tonic on the glacial accumulations beyond the Adige.

INTERCROP CULTIVATION IN VINEYARDS.

The practice of cultivating for other crops the spaces between the vines is universal; in fact, the vine can hardly be said to have any distinct apportionment, but rather to be superadded as the necessary garniture of every field, which, regardless of its presence, is tilled in all respects according to the ordinary agricultural routine of the country, and this double culture only fails where the situation is so precipitous or so bare as to make any product but that of the vine out of the question.

PROFITS OF VINE CULTURE.

According to situation and treatment, the vine begins to become profitable at about three years, and is in full bearing at six.

Throughout the Venetian provinces, in strong contrast with those of Lombardy, artificial irrigation is little developed; in several it is almost unknown, and where it exists is much more in request for meadow and other culture. The vine, intermingled with other crops, may receive an interloper's share of the common benefit, but the localities which it prefers, as well as the nature of the plant, mostly place it without the scope of any special arrangement for the purpose. Occupying, besides, no special place in the apportionment of the farm, its balance of outlay and return is always liable to be confounded with the general mass of operations for the year, while the selling price of its product differing more widely with slight shades of real merit, and often depending on an artificial or fanciful value of appreciation, the ordinary calculations of commerce are not easily adjusted to it. Estimates vary greatly in official as well as professional publications. The following data, however, are the most detailed that I have been able to procure, and may represent one of the most successful and best conducted vineyards of Verona:

Expense per acre for harrowing, hoeing, &c	$4 80
Expense per acre for manuring	3 20
Expense per acre for pruning, oziers, and stakes	3 60
Expense per acre for leafing	40
Expense per acre for sulphur	2 40
Expense per acre for gathering	96
Expense per acre for bringing in	40
Total	15 76
Product, 1,200 kilograms of grapes, at .04	48 00

To illustrate the extraordinary differences of return to which the industry is subject, independently of outlay or treatment, an estimate purporting to represent facts may be cited from a parliamentary return on the subject. The comparison is limited to a parcel of 60 vines married to 15 trees, and provided each with 5 additional sustaining stakes, and the expense incurred, in each case the same, is:

300 stakes, at 2 cents each	$6 00
Pruning (6 days' work)	1 20
Sulphur (30 kilograms, at 5 cents)	1 50
Sulphuration (2 days' work)	40
Vintage (10 days' work)	1 60
Total	10 70

MAXIMUM PRODUCT.

3,532 pounds of grapes	$46 40
444 pounds of wood	1 19
Total	47 59

MINIMUM PRODUCT.

444 pounds of grapes	$5 80
222 pounds of wood	60
Total	6 40

LEMON CULTURE IN VENETIA.

Although the principal center of exotic culture is not found within the consular district of Venice, some account of the circumstances and methods connected with its practice in the province of Verona may be of interest to fruit-growers in answer to the inquiries of the Department.

The Lake of Garda, the largest of the Italian lakes, while penetrating with its northern extremity far into the mass of the Great Alps, opens out into the plain to the south with barely the difference of level necessary to contain its waters, and the more completely it allows the warm air of the plain to penetrate into its deeply imbedded mountain recesses, the more completely is the tepid element sheltered and isolated from the colder currents of the north. Bathed in this genial atmosphere, the precipitous shores form a range of natural espaliers, exposed to the southern sun in all its course and enjoying a climate of their own, on which the cultivation of oranges and lemons has been a profitable industry for several centuries. It is on the western shore of the lake, in the region of Brescia, that both fruits are produced with success, while to the east, and properly within the Venetian territory, the lemon only, being the more hardy, is cultivated to any extent for commerce, the orange being more rarely planted, except for experiment or ornament; its fruit does not generally come to maturity.

Cultivation.—The lemon is cultivated in the open air and succeeds perfectly, though requiring the nicest care and attention. It demands a soil sufficiently loose and fresh to permit the free passage of solar heat without baking or shrinking, and largely composed of the substances most suitable for the formation of acids, of sweet and aromatic juices, such as the alkalies, and particularly those of potassa and lime.

Analysis.—An analysis of the trunk and fruit of the lemon shows in the fruit the presence of 47.48 per cent. of potassa, 22.82 per cent. of lime, and 11.57 per cent. of phosphoric acid; in the trunk, 55.13 per cent. of lime, 17.09 per cent. of phosphoric acid, and 14.76 per cent. of potassa, with smaller proportions of other substances.

Manures.—The manure should be of a nature to complete the natural resources of the soil, by still further additions of alkaline and azotated substances: stable manure, mixed with leaves and sea-weed, and left to decay together till they form a loam, to which may be added powdered lime or plaster of Paris and night soil; some cultivators use also the refuse of the wine and oil press.

Propagating.—For propagating the plants, a nursery is generally formed in some spot particularly favorable for soil and exposure, and here the plantation may be made in various ways—with the seed simply, with a portion of root which has already given a sprout, with slips buried till they commence taking root. From the seed sown in spring the plants are more robust, but such plants always require to be grafted later, which is done sometimes in the simple split, but oftener by the insertion of a bud on some thrifty shoot from one of the lower branches.

The young plants remain for six years, more or less, in the nursery, and here, or in the pots or cases to which they are sometimes transferred, they receive the care necessary to bring them to a certain degree of vigor and solidity, as well as the pruning and shaping generally to the form of a sphere or hollow vase.

Transplanting.—When ready for transplanting, the ground is prepared by digging a broad ditch the whole length of the proposed line of trees,

taking care to break the earth as deeply and widely as possible to give free passage for warmth and moisture, and clearing of any stones or large pebbles. The plants are removed from the nursery or case, with the mass of earth adhering to their roots, and set in the earth 9 or 10 inches deep. Care should be taken at the same time to separate and spread any roots too closely grouped together, or tending too much inward or downward. In refilling in and around the roots manure should be used liberally, and a slight elevation of earth raised around the spot to retain water. The plants are sometimes grafted before this transfer, sometimes only a year or two after. Each plant should have about 25 square yards of open ground around it; in these intervening spaces, however, small shoots are sometimes cultivated for sale or transplantation, but in all cases the earth should be well spaded during the first year at least, lopping the roots which come too near the surface. The young trees are sheltered during the winter, and the ration of manure for each is prepared beforehand and placed under cover near it for protection from cold, to be well worked into the ground with the first spading, which takes place at the commencement of vegetation in spring.

At the same time the tree should be pruned of its dried or weakly branches and leaves, which would become points of attack for mildew or insects, as well as to maintain its compact and advantageous form, and this cleansing operation, after being carefully attended as soon as the advancing season offers some security against returns of cold, should be renewed toward the 1st of July, when the first period of vegetation has well marked the relative vigor and promise of the young shoots.

The plants should be watered according to the requirements of the season, using for the purpose water from which the chill has been removed by standing in the sun. This is done here mostly by hand with the simple old-fashioned watering-pot.

Where the plants are kept in pots or cases, here as elsewhere, they are more for ornament than profit, and in this case the filling is entirely of manure, and should be renewed every three years. At a certain stage of growth, also, it is necessary to transfer the plant to a larger recipient, though one change of the kind is generally sufficient, a case of 2 to 2½ feet in diameter being large enough for it at almost any age. The operation should not be executed without due precaution. The plant, enveloped in cloths or rags, and lifted gently by ropes and pulleys, should suffer no violence; while suspended, the smaller and too extended filaments of root trimmed away, and lowered with its mass of earth undisturbed into its new receptacle on a stratum of fine gravel prepared for it, the empty spaces filled as before with manure and loam well worked into the roots. The plant should then stand in the shade for about eight days, guarded, as far as possible, from sudden changes of temperature, and copiously watered, admitting, however, the external air if in the greenhouse, when the weather permits it.

Finally, and to prove that after all Italy is not the natural home for these delicate products, even with all these precautions, the orange and lemon plants, which thrive here in the open air during summer, cannot risk the winter without protection, either in the greenhouse or under provisory sheds of light planking, provided with stoves and conducting tubes sufficient to maintain a certain uniformity of temperature in every part of the inclosure. Many cultivators regulate their practice in heating by the simple expedient of placing a vessel of water near the plant, and light their stoves when the water begins to freeze. This, however, is considered dangerous, as the injury may be already done before the signal is given or observed, and the

plant once attacked by frost is beyond remedy. More careful gardeners use the thermometer, and begin heating when it marks 6° or 7° Fahr. above freezing point, particularly if the weather is clear and dry.

With all these risks and precautions the cultivation cannot but be regarded as exotic and artificial, and the fruit, though large and handsome, is watery in quality, with much of its substance taken up by the disproportionate thickness of the rind; nor has it the concentrated acid of the lemon produced in more congenial climates. The yield, also, is very precarious, and always liable to be prostrated by any extraordinary severity of the season. It is estimated for the average year at 500,000 lemons of various sizes, with an average value of 15,000 francs ($3,000).

OLIVE CULTURE IN VENETIA.

If, as has been seen, the production of oranges and lemons at a special point of the Venetian territory is in reality a forced and artificial industry, that of the olive, so characteristic in many other parts of Italy, is hardly better suited to the natural conditions of the country here, and only reaches the importance of an industry in the same limited region. In all the eastern and central portions of Venetia the plant itself is rarely seen, and its cultivation for product insignificant or null. At the extreme west, on the hilly slopes with southern exposure around Verona, are found occasional plantations, though their extent and production have constantly decreased since the sixteenth century in consequence of the change of climate, caused by the excessive denudation of the mountains, and the exaggerated risk and difficulty thus produced to the cultivation, besides the outlay of time and capital before a return can be gathered. In an industry thus discouraged and declining, little effort is made for improvement, and in general, as it is one of the most ancient of all forms of culture, so is it perhaps that which has least benefited by the application of art or intelligence.

The olive cultivated here and throughout Italy, whatever modifications it may have undergone by climate and situation, belongs to but one species—*Olea Europea*—which, however, with long neglect and hardship is subject to a transformation so marked as to appear a change of nature. When the tree becomes scrubby and uncouth, changes the form of both its leaves and branches, bears only abortive fruit or none at all, and assumes almost the character of a different species, in this form it is known as the *Olea silvatica*. Ungrafted or abandoned trees always tend to return to this primitive type.

In the Veronese olive plantations a number of varieties are distinguished, resulting from local conditions, by which the plant is still easily influenced. Among these are specially prized the *Cosaliva* or *Prizzar*, a low spreading tree, with pendent boughs, long lance-shaped leaves, and small oval fruit, which has the merit of bearing each year regularly, not at all certain with other trees; the *Drupo forte*, taller than the above, with narrower and sharper leaves and fruit, rich in oil, but very delicate and capricious in its product; the *Gagnan*, likewise a considerable tree, with branches less inclined and roundish fruit very full of oil; the tree is hardy, but only bears every other year; the *Rosa*, *Razza*, or *Razer*, the tallest of its kind, with large pulpy fruit extremely rich in oil, but it bears only in two or even three years, and its oil is only middling in quality.

For table use, the varieties which give the best fruit are called usually *compostar* (from *compost*, French *compôte*, a conserve). These are the *compostar* simple, a delicate tree with large oval fruit, but very

ariable in size and quality, according to locality; the *compostar grasso*, uit large and round, more hardy, but, like the above, bearing well only favorable years; the *compostar di Spagna*, fruit oblong, bears only in od years and favorable situations; the *compostar piccolo*, thrives everyhere, but inferior in quality; and others less deserving of mention.

Methods of cultivation.—The methods of cultivation and of propagaon are simple in the extreme. The plant may be propagated by the *lea*, a quadrangular slip of the bark, some 3 inches long, with a poron of wood or woody protuberance adhering to it; or else by a fragent of the trunk, branch, or root, planted in earth well and deeply roken up, with the point only uncovered; but the tree thus produced ould be weakly and short-lived. On the other hand, plants produced om the seed, although the most robust and durable, give no fruit till velve or fifteen years old, and are not in full bearing till twenty-five thirty, while the slow return of the tree is already one of the greatest bstacles to its cultivation. Between these objectionable methods, the sual practice here is to reproduce from *polloni*, or sprouts, which rise ontaneously from the more superficial roots of the old tree at their rst ramification, or from wounds caused by instruments of labor. hese sprouts are allowed to grow on the spot to about 3 inches diamer; the root is then uncovered and the bearing portion, with the sprout ttached, removed to its future locality, the breach being neatly smoothed nd covered with a plaster of dung diluted in water before replacing ie earth. The sprout, at the moment of planting, is docked at about foot from the ground, and the cut extremity covered with a similar laster of dung and clay. The trees produced in this manner commence earing at the age of five or six years. Should these young plants be stablished in a locality differing much in soil or exposure from their riginal home, they are grafted from trees already adapted to the sitution.

When a new plantation is to be made the ditches for each row are pened some time before, with a width of 4 or 5 feet, and, if possible, 3 et deep, or, if in separate holes, they should be 6 feet square, and as eep as the soil will permit, and the first 9 inches of earth kept part to allow that from below to profit more fully by the action of the ir. When replaced it should be liberally mixed with manure, or, if ore at hand, with bits of leather, of hoof or horn, woolen rags, shrubs, rass, or dead leaves, taking care to mix such materials well with the arth, but not in contact with the roots.

The distance between plants varies much with situation, but the edium in ordinary cases is to allow 10 or 15 yards between rows and om 6 to 10 in the row. A circular ridge of earth, a yard or so across, hould be raised around the plant that the rain water may be kept and rced to filter among the roots. Some cultivators envelop the stems r fear of exposure, but this is not necessary at the season of planting, nd has the effect of preventing the absorption of light, air, and solar eat, most necessary to the plant at this period.

INTERCROP CULTURE IN OLIVE PLANTATIONS.

In most cases the intervening spaces are cultivated with the ordinary ops of the country, maize, wheat, luzern, or a rotation of those crops; ut, while the constant movement of the soil between the trees is advantageous, the exhaustion of its nutritive elements by such plantaons is certainly a prejudice, especially after the trees have attained a

certain size and vigor. The best authorities urge their discontinuance after ten or twelve years, without, however, neglecting to spade the ground in April or May, and, if possible, in August of each year. Those who attach primary importance to their olive crop oftener sow vetches, lupines, beans, and such vegetables only around their trees, and turn them in with the spade or plow, a practice which, by common consent, gives precisely the manure best suited to the requirements of the plant.

MANURE AND PROTECTION FROM COLD.

About once in three years the supply of more stimulating manure should be renewed, and for this purpose, as before mentioned, besides the ordinary stable product, the refuse of the tannery, remains of hoofs, and other substances containing azotates, phosphates, and carbonates of potassa, are excellent material.

It is usual, on the approach of winter, after the crop, to raise a considerable heap of earth around the foot of each tree to protect the roots from a possible excess of cold. The olive perishes if exposed to a temperature of 11° or 12° centigrade below zero (=+10° or+12° Fahr.), and if attacked at the season of renewed vegetation, even at—7° or—8° centigrade (=+19° or + 20° Fahr.).

PRUNING AND CULTIVATING.

A general pruning takes place in spring as soon as all danger of returning frost has disappeared, when decayed or suffering branches, as well as those which have borne fruit for several years, are removed, leaving the sap to be engrossed by the young sprouts of the year, it being the nature of the olive to put forth and nourish, during one season, the branches which are to bear fruit the next, as the multiplication of these branches tends constantly to disseminate the productive force in a thicket of unprofitable shoots, in which case the tree will give a satisfactory crop only once in two or three years. Constant pruning is necessary to concentrate its vitality. No less attention is required to combat the effort of the upper limbs, the so-called *ghiottoni*—gluttons—to draw the sap to their own vigorous growth at the expense of the fruitful branches lower down. The best bearing olives are generally kept low, often with pendent boughs, and this practice becomes a necessary precaution in exposed and windy situations.

YIELD OF OLIVES.

It is extremely difficult to fix the normal yield of olives in a region where their cultivation is so precarious, and where the success of the crop is more subject, perhaps, than that of any other to the influence of the season. Without careful and intensive cultivation the plant becomes savage and bears nothing. With the best treatment it will give 6 to 8 liters (7 to 8½ quarts) at 10 years, 16 quarts at 17 years, and 32 at 25 years; but this only in exceptionally favorable year, with refreshing rains in August and September.

It has already been stated that the olive in no case commences bearing fruit before the age of 6 years. It reaches a great age, 600 to 800 years on the average, frequently 1,000, or more. Researches, more or less reliable, have been published, affirming that each cultivated plant

ves during its existence an average product of 10,356 kilograms of oil, ırying infinitely, of course, with the age and nature of the tree and ode of culture.

GATHERING AND PREPARING THE OLIVES.

Olives intended for the press are gathered at full maturity in Octo- ɜr, November, and even as late as January, with much difference of ractice in this respect, as the fruit of the same tree ripens with very ıequal promptness and grows richer in oil to the last moment. On ıe other hand, if over ripe, the oil is much more subject to become ıncid, besides the risk of injury from premature frost or snow and in- ɔcts, so that the surer practice is to gather while some part of the fruit still green.

For table use on the contrary it should be plucked not quite ripe, ıd, the finest and largest being selected, to neutralise the contained ɔid which renders them acrid to the taste, they are placed as soon as ıthered, in a vessel of glass or eathenware, filled with lime-water in hich the olives float, and the orifice closed with osier. After standing ıus for twenty-four hours the lime-water is drawn off from below and ıplaced by water, fresh and pure; thenceforward it should be re- ɔwed every twelve hours, alternating pure and lime-water till the quid comes from the jar flat and tasteless. In this condition the lives may be long kept good if immersed in a solution of sea salt fla- ɔred with any aromatic.

For drying, the olives are gathered later and riper, and dried in the ın or oven like any other fruit.

PROCESS OF EXTRACTING THE OIL.

The processes for extracting the oil all date from time immemorial, ıd are of the most primitive description. After fermentation the fruit ields its oil much more readily but of inferior quality and already with commencement of rancidity. Nevertheless the difficulty of extracting completely with their imperfect appliances, leads many to provoke ırmentation by keeping the olives closely covered with matting or oolen cloths. They are then placed in a hopper, from which they drop radually into the hollow, inverted, and truncated cone of a great stone ortar, in the bottom of which turns a sort of millstone, grinding fruit ıd stones to a coarse paste. The pulpy mass is now mixed abundantly ith warm water, placed in sacks of hempen cord, and ready for the ress. This last is of the simplest mechanism; a heavy wooden beam om 8 to 12 yards in length, fixed at one end and acted on by a screw t the other, forms a lever of the second class. The sacks are placed ı the platform in piles of two and three ôr three and four on each other, ı a double heap, to adjust them to the inclination of the press-beam, ıd as the pressure increases are crowded back and still bathed with arm water till the pulp begins to leave the sack with the oil. This is ıe first draught and the first quality of oil. The refuse mass is then nptied again into the mortar, with a liberal addition of warm water, round over, and again put to press, yielding still a fair quantity of indif- ırent oil. The whole operation is repeated a third time, and after pass- ıg through a coarse sieve, even a fourth time, but these last dregs are ıly fit for burning or mechanical purposes. This is all that can be ob- ıined by the press power at present in use here, and yet so rich is the

fruit that after this insistent extraction, the oil still held in the refuse gives it unequalled value as a fertilizer or as food for animals.

The oil from these repeated pressions, largely mixed with pulpy and fibrous matter, passes into a large vat, where its freer and purer portion rises to the surface while the "*morchia*" or pulpy mixture is drawn off from below into large shallow basins, in which, when subjected to a warmer temperature, the albumen coagulates, and the remaining oil, with that already collected, is placed in stone jars ready for sale. From the refuse flux, if subjected to fermentation, which causes the still refractory oil vesicles to burst, a certain quantity of very bad oil may be extracted, but this operation is generally left to the press hands for their perquisites.

Another process is is still more primitive. Here the olives are placed in a long woolen sack, and trampled under foot until the pulp is well separated from the stones. The sack is then doubled on itself and placed under the press with constant additions of warm water as the operation proceeds, and the oil obtained purified in the manner above-described. The refuse and unbroken stones are then sold to the owners of grinding mills for a fresh extraction. The product obtained by this simpler process, though less in quantity is much preferred in commerce, being the pure extract of the pulp alone, the unavoidable mixture with that of the kernels after grinding, greatly imparing the flavor of the whole.

CIRCUMSTANCES FAVORABLE TO THE GROWTH OF OLIVES.

All the circumstances which favor the growth of the olive are such as generally place it either on hillsides or the shelves at their feet, where, well protected from the cold winds of the north, it may bask in a long season of summer sun, and where, also, it finds oftener the light soil of granitic or schistous detritus that suits it best, while the large mixture of clay common to valleys and bottoms produces the damp and compact formation of all others the most inimical to its nature.

It is traditionally the plant of warm regions and of long dry seasons; an oversupply of water would be more injurious to it than otherwise, and no irrigation is attempted or thought of here. However, moderate watering at the opportune moment is always of benefit, and, as before mentioned, those years when some rain occurs in August and September, improve the crop. Where the tree is intermittent, these are the bearing years.

Far from dreading the neighborhood of the coast, it has been said that the olive is never found more than 150 kilometers from the sea; and although instances are recorded of ancient plantations in Piedmont somewhat farther inland, it is certainly true that the olive orchards of Europe skirt the shores of the Mediterranean, and the most flourishing are those that clothe the narrow margin of rocky soil between mountain and sea. Those described above in the region of Verona, at about 125 kilometers from the lagoon of Venice, are among the farthest removed, and not among the most prosperous.

Some notice has been given above of the productiveness of the olive, as rather precarious in the uncongenial circumstances of the region; I have not been able to procure any detailed statement of the economical elements of the culture, but as the plant is grown either in the midst of other crops or on ground which would be otherwise unavailable, it is not generally regarded here as a factor of importance in the account of a farm. The latest statements give the present production of oil in

the province at about 10,000 hectoliters (264,000 gallons), consumed entirely there and in the neighboring region. The preparation of the fruit for table use is exclusively domestic, or, at most, for the retail trade and consumption of the town population adjoining, and no mention is made of it in the statistics of the country.

The rainfall registered for the city of Verona for a period of 20 years, from 1861 to 1878, is as follows:

	Inches.		Inches.
1861	19.21	1871	31.10
1862	32.44	1872	47.10
1863	29.31	1873	38.77
1864	26.16	1874	27.16
1865	21.51	1875	22.12
1866	29.21	1876	42.07
1867	18.68	1877	34.18
1868	40.72	1878	35.04
1869	56.61		
1870	29.85	Average	32.29

FIGS.

The fig is regarded here rather as a vile and common plant, insufficient either in quantity or quality for preservation as an article of export, and requiring neither care nor attention in its growth; it thrives everywhere unheeded, in sheltered spots, near country houses or along garden walls, and only serves to supplement the outfit of the market gardener for the nearest town. The fruit at Venice is neither succulent nor very well flavored, though large and showy, and often ripens badly or rather decays in ripening. At Verona it is cultivated with care in a few localities, and one variety, with a fruit very small and intensely sweet, the "*Segalini*," much resembling and probably an acclimation of the "*Piccoli Verdini*" of Tuscany, but inferior, has a local reputation. Besides this, the "*Napoletani*" and "*Santi*," introduced from the south, are dried for home use.

As the tree is only found casually in odd corners, and usually single, there can be no estimate of yield per acre.

For planting, any portion of a branch, slightly beaten and bruised, if placed in the earth will readily take root; the variety preferred may be grafted on it at a proper age.

Along the shores of the Lake of Garda the product less in demand for the market as fresh fruit is dried in small quantities by the simple process of exposing to the sun on osier gratings and packed in small kegs with a little sugar and a liberal sprinkling of flour; or else strung on twigs and hung in the sunshine till completely evaporated, but all this only for family consumption; there is no exportation of the article, the consumption of which, on the contrary, is entirely supplied by importation from the south.

McWALTER B. NOYES,
Consul.

UNITED STATES CONSULATE,
Venice, March 3, 1884.

FRUIT CULTURE IN SARDINIA.

REPORT BY CONSULAR AGENT DOL, OF CAGLIARI.

RAISINS.

Vineyards in Sardinia are not planted for the produce of raisins, but only for making wine. They are to be found in all positions, but the best results are obtained from those which are grown on a somewhat moist and light good soil, protected from the cold north winds, and where the sun can freely shine on the plant.

Vines do not suffer from being near the sea. Some of our best producing vineyards are situated at not more than 300 to 400 meters distance from the shore. They are generally cultivated three times a year, but the pruning of raisin vineyards differs, I am told, from those which are grown for making wine, and which are always kept very low. The yield value for each hectare is about 500 francs, and the cost of cultivation about 300 francs. Vineyards are never artificially irrigated, nor is this considered necessary.

ORANGES AND LEMONS.

These are only grown in gardens, but not extensively, and the mode of cultivation is very defective. Sardinia does not export either oranges or lemons, the produce of the island being barely sufficient for the local consumption.

FIGS.

The fig-tree is not extensively grown here, and the mode of cultivation and curing the figs very defective. The superior quality, or dried figs for table use, are generally imported here from Naples.

OLIVES.

Olive trees are only grown with profit on the north of the island (province of Sassari), but are to be found wild everywhere. They are not particular as to soil, and will grow well whatever be the nature of the land, but the best results are obtained from those which are grown on loose stony and sandy soil, where the heat of the sun can freely penetrate through the earth. The variety of tree generally cultivated is the common olive tree, but when intended for pickling or table use a superior variety of tree is grown, the fruit of which is picked green.

There is no particular mode of cultivation adopted, and the only care that is taken is to keep the branches low so as to prevent their being too much exposed to the wind. Both the process for extracting the oil and preparing olives for table use is most defective. The best and strongest trees are obtained by grafting the wild olive tree and from seedlings, which are also grafted, and generally begin to bear fruit about four years from the date of grafting.

The cost of cultivation per hectare is estimated at 250 francs and the yield about 500 liters of oil (189 gallons).

There is no system of artificial irrigation in use for olive culture in Sardinia.

ALPHONSE DOL,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Cagliari, March 17, 1884.

SPAIN.

OLIVE CULTURE IN SPAIN.

REPORT BY CONSUL OPPENHEIM.

ORIGIN AND ANTIQUITY OF OLIVE CULTURE.

The olive tree has been cultivated from the most remote historical times. The ancients believed the tree to have been spontaneously created by a beneficent divinity, and the Greeks attributed the gift sometimes to Minerva, then again to Mercury. Diodorus states that Aristæus introduced the tree into Sicily, and was the first to use stone mills and rustic presses for the extraction of oil. Both the fruit and oil-pressing were, however, known to the Egyptians at a period even more remote than that of Greek myths, as is evidenced by wall pictures representing the process of filling the olives into sacks, which, when full, were placed in presses, from which the oil is seen to flow. Strangely enough, that very Egyptian process of pressing in sacks was until a few years ago in use in remote districts of Spain (in La Mancha), and may still be practiced at this day. There exists some doubt as to whether the olive tree is indigenous to Spain. The wild species is undoubtedly found in many districts, from Catalonia to Cadiz, but by many it is held that these wild trees are merely the survivors of abandoned plantations, which have reverted to the aboriginal form. Be this as it may, and whether the tree be an immigrant or "to the manor born," Spain is certainly to-day its chosen home, and it is generally admitted that three-fourths of the olive zone in Europe lies within the borders of the Peninsula.

VARIETIES, BEARING AGE, AND DURATION OF PRODUCTIVE PERIOD.

The varieties of the olive tree cultivated in Spain are numerous. The list following shows the kinds that are most largely raised, and describes the size and appearance of the fruit.

(1.) The *Manzanillo:* This tree, under good conditions of soil and temperature, grows to a large size. It is found in Seville and in Granada in great abundance, also in the maritime zone and some of the protected and fertile spots of the central region. It needs a rich soil, or, wanting that, high manuring and cultivation; makes good oil, but in the province of Seville is mostly used for pickling. It is a great bearer, and the fruit, which is large, matures early. The dimensions and weight are as follows: length, 25 millimeters; diameter through the thickest part, 23 millimeters; weight of pulp, 7 grams; weight of stone, 1 gram.

(2.) The *Sevillano Gordal:* A small tree; is found chiefly in Seville and the lowlands of Western Andalusia; wants rich soil, manuring, and usually irrigating also; is not resistant to cold, and must not be pruned freely, as it is very sensitive to mutilation; does not yield much oil, and that little is of poor quality; is used almost exclusively for pickling; it bears the largest fruit known, which is identical with the "queen olives" of commerce. It is a small bearer and matures late. Dimensions and weight of fruit are: length, 40 millimeters, by 30 millimeters in diameter; pulp weighs from 12 to 14 grams, and stone about 2 grams.

(3.) The *Bellotudo:* A large and luxuriant tree; not confined to any

special district; requires phosphates in abundance and careful pruning, as the limbs have a tendency to intertwine; gives good oil and matures early, but is a small bearer. Dimensions and weight of fruit: length, 23 millimeters; diameter, 19 millimeters; weight, about 3.2 grams for pulp, and 0.9 for stone.

(4.) The *Redondillo:* A medium-sized tree; a hardy and resistant variety, found chiefly in Central and Northern Spain; needs good soil, manuring, and thorough cultivation, also careful and extensive pruning for the same reason as above variety; is excellent for pickling, and gives good oil also; is a large bearer, and the fruit matures very early, requiring only 3,400 heat units (*vide infra*). Dimensions and weight are: length, 18 millimeters; diameter, 16 millimeters; weight of pulp, 2.5 grams, and of stone, 0.5 gram.

(5.) The *Lechin:* Under good conditions this tree reaches a large size; is found in the provinces of Jaen and Cordoba, though not in abundance, being really a northern variety, as it is very hardy and resistant. In Spain it is only used to make oil; in France, however, it is a favorite for pickling; is a large bearer, and fruit matures early. This olive is one of the smallest known, total weight being approximately 1.3 grams.

(6.) The *Nevadillo blanco:* A tree of fair size, found chiefly in Jaen, Cordoba, and Cadiz; must be planted only in well-sheltered spots, being sensitive to winds and to frost; is only used for oil-pressing; matures the fruit early and is a prolific bearer. Dimensions and weight of fruit are: length, 23 millimeters; diameter, 15 millimeters; weight of pulp, 3.6 grams; and of stone, 0.7 gram.

(7.) The *Varal blanco:* A large-sized tree, with straight and vigorous branches; chiefly found in the province of Jaen; needs manuring and careful cultivation; the fruit, which is always scanty in quantity, makes good oil, and is only used for that purpose; matures irregularly, making collection troublesome. Dimensions and weight of fruit: length, 23 millimeters; diameter, 17 millimeters; weight of pulp, 2.8 grams; and of stone 0.6 gram.

(8.) The *Empeltre:* A small tree, throwing out but few branches; very hardy, and therefore adapted to a cold climate; is chiefly raised in Navarre and in Aragon; requires light and fertile soil, plenty of humidity and manuring, under which conditions it is a most prolific bearer; it matures early, and is by many considered as one of the most desirable varieties; the fruit yields good oil, and is also excellent for pickling. Dimensions and weight are: length, 28 millimeters; diameter, 16 millimeters; weight of pulp, 3.2 grams; of stone, 0.8 gram.

(9.) The *Racimal:* A medium-sized tree; resists a cold climate well, and thrives fairly even on poor soil; makes oil of a fair quality, though leaving much refuse in pressing; is given to "off years"; the fruit matures very early, probably earlier than that of any other variety. Dimensions and weight are: length, 23 millimeters; diameter, 15 millimeters; weight of pulp, 3 grams; of stone, 0.7 gram.

(10.) The *Varal negro:* A fair-sized tree, with straight and large branches; only thrives in well-sheltered spots, as it hardly resists a temperature lower than —5° cent., especially when followed by a quick thaw; found sparingly in Jaen and Cordoba; requires very careful pruning and cultivation, and bearing limbs should be ringed; yields good oil; is objected to on account of its being given to "off years"; in good years, however, it is a large bearer, and the fruit matures early. Dimensions and weight are: length, 25 millimeters; diameter, 17 millimeters; weight of pulp, 2.2 grams; of stone, 0.9 gram.

(11.) The *Gordal:* A tree of large size, and fine, vigorous branches, also a very quick-growing variety; is one of the kinds most generally distributed throughout Spain; is largely cultivated in Andalusia and in the central provinces; requires good soil, manuring, and much cultivation in order to bear well; resists the cold very well, matures early, and is a prolific, regular bearer; the fruit is good both for oil and for pickling, and its dimensions and weight are: length, 23 millimeters; diameter, 18 millimeters; weight of pulp, 3.7 grams; and of stone, 0.5 gram.

(12.) The *Verdejo:* A tree of medium size, with a tendency to dwarf considerably if not well cared for; is found chiefly in Catalonia, Logroño, and Madrid; very hardy and resistant to cold; the yield will be in proportion to fertility of soil and the care given to cultivation; is generally used for pickling only; is not an early maturing variety. Dimensions and weight of fruit are: length, 22 millimeters; diameter, 12 millimeters; weight of pulp, 3.1 grams; of stone, 0.6 gram.

(13.) The *Madrileño:* A medium-sized tree, of symmetrical apperiance, limbs arching over; found chiefly in the south and in the martime zone; its name appears to be a misnomer, as it is not cultivated in Madrid or in the central provinces generally; requires good cultivation and cautious pruning; the fruit is excellent for pickling, next to the "queen" in size, and of delicious flavor; gives fair oil, but only yields a small quantity in proportion to the weight of its pulp; matures late and is not prolific. Dimensions and weight of fruit are: length, 35 millimeters; diameter, 28 millimeters; weight of pulp, 11 grams; of stone, 1 gram.

(14.) The *Cornicabra*, also called the *Cornezuelo*, the largest olive tree known, having strong, straight branches, is found all over Spain, but is most numerous in the central provinces; gives better oil than any of the other late-maturing varieties, which, however, as a class, are in that respect much inferior to the early-maturing species; is very resistant to cold, and matures very late (it requires 3°.978 of heat, *vide infra*); production is variable. Dimensions and weight of fruit are: length, 39 millimeters; diameter, 19 millimeters; weight of pulp, 4 grams.; of stone, 1.2 grams.

(15.) The *Picudo:* A medium-sized tree, with luxuriant limbs, placed obliquely on the trunk. Like the above, it is most frequent in the central districts; bears a fruit which is very much prized for pickling, and has besides the peculiarity of being a "clear-stone" olive; a fair bearer, but matures late, though earlier than the variety immediately preceding. Dimensions and weight of fruit are: length, 30 millimeters; diameter, 18 millimeters; weight of pulp, 3.2 grams; of stone, 1 gram.

(16.) The *Nevadillo negro:* A medium-sized tree, very luxuriant, and with short and distorted limbs; is largely cultivated in the province of Jaen, where it is prized above all other varieties; produces most plentiful and excellent oil; with careful cultivation and good soil it is a large and regular bearer; matures late; the fruit is pointed and much bent at the distal end, causing this end to point at a right angle from the axial line. Its dimensions and weight are: length, 23 millimeters; diameter, 15 millimeters; weight of pulp, 3.6 grams; of stone, 0.7 gram.

Every one of the above-mentioned varieties can be reproduced in several ways, which will be further descanted on when describing the mode of planting. The most generally adopted modes of propagation are either by planting *estacas*, which are round, large limbs specially raised for the purpose on the parent tree, as thick as a man's arm and from 2 to 3 meters long, or *garrotes*, which are shoots of

from 70 to 90 centimeters in length, two of such shoots being usually planted in one pit. By the first system the trees bear after three years, but with *garrotes* it takes usually from six to eight years. Full bearing is in the larger varieties not reached before twenty to thirty years after planting. With the small and dwarf varieties twelve to fifteen years may be nearer the truth. The maximum of growth is, at least with all large varieties, not reached before eighty years, and individual trees, either on account of especial vigor or favorable surroundings, keep on growing for centuries, reaching gigantic size. A French writer mentions three enormous olive trees standing near Tarascon. In the hollow trunk of one of them twenty persons could stand next each other, and another had branches 16 meters long. These trees were reputed to be nine hundred years old. The trees standing on the Mount of Olives, near Jerusalem, are by many believed to be the identical ones that stood there at the time of Jesus Christ. The duration of the productive period is also most difficult to determine; all that is known is that it lasts extremely long, when not cut short by injuries to the tree or exhaustion of the soil surrounding it.

MODE OF PLANTING OLIVE TREES.

Olive trees raised from the stone of the fruit always revert to the original form, called here *acebuche* or wild olive; hence in order to reproduce desirable varieties it is necessary to plant parts taken from the living tree, whether shoots, branches, or roots. The most general modes of reproduction is either by *estacas* or by *garrotes*. Both modes are followed pretty nearly all over the country, though in the central provinces the second process is the more general, whilst the contrary holds good for the south and the extreme north. The best time for planting (by either mode) is from January to March in the maritime zone, from January till April in the central provinces, and from January till May in the north; and it may be taken as a safe rule to plant only when the frosts are *over* and *before* the trees have begun to bud. The *estaca*, which, as before stated, is a stout limb about 3 meters long, should, if possible, be planted immediately after being cut from the parent tree. The hole is dug to a depth varying from 1 to 2 meters, the depth increasing with the severity of the climate; square pits 90 centimeters each way are the best, but quadrangular ones are less expensive and generally used; this pit should be about 85 to 90 centimeters long by from 20 to 30 wide, and if planting on inclined ground, the length should cross the line of descent. At the bottom of the pit a layer of well-rotted manure is first deposited, upon which a layer of active outer soil is laid to a depth of 3 or 4 centimeters; the limb is then placed in the center of the pit and earth (from the upper layer, not that dug from the pit) is then put in, thoroughly broken up, and pressed down with the feet; when about even with the surrounding earth, a small concavity is left in order to retain rain or irrigation water. This operation is best performed by two men; one keeps the limb in position and compresses the earth, whilst the other is filling in. In Andalusia it is usual to pile up moist clay against the protruding part of the *estaca* until no more than about 30 centimeters of its length is visible; this is held to be very efficient in all hot, dry regions, as otherwise it often happens that the limb produces shoots from the lower part only, whilst the upper part dries up. The moist clay is piled in the form of a slender cone, and at half its height an opening is left for supplying the limb with water, which in dry weather must be done plentifully. The *garrotes* are cuttings of from

70 to 90 centimeters in length, which with most varieties may be supplied in goodly numbers by such pruning as will benefit the tree. The pits are dug somewhat less deep than for the *estacas*, and two of the *garrotes* are planted together, leaning towards each other in such a position that the two cuttings and the bottom of the pit form a triangle, of which the apex is even with the ground. In regard to manuring and filling the pit, the process is similar in both modes of planting, only the upper part of the smaller cuttings must be covered with about 10 centimeters of loose soil. The sprouts from these smaller cuttings are more exposed to damage by frost and by animals than is the case with the plan first described, and the bearing age is also reached some four or five years later, but it is held that the trees raised in that way are more vigorous and productive.

Other modes of propagation, such as by shoots from the living roots of a dead tree, or by raising stocks from seed upon which to graft later on, are known to give excellent results, and are occasionally practiced, but the vast majority of Spanish growers confine themselves to the two processes here described.

CULTIVATION, MANURING, AND IRRIGATION.

During the first eight or ten years after planting, the orchard should be plowed three times each year (with a plow making a furrow 10 inches deep), and the soil immediately surrounding the plants hoed three times the first and second year, and later on twice a year. It will frequently happen that plants do not sprout the first year, in which case an extra supply of water and labor should be devoted to such plants; should they, however, not produce shoots for two complete years, they should be dug up and replaced by others. The distance at which trees should be placed depends primarily upon the variety planted, the rule being to allow an interval equal to twice the height of the full-grown tree. This is the general rule, which must, however, be departed from according to local circumstances of topography, soil, and climate. Considerations in favor of closer planting are that trees closely planted resist both frost and drought better, and also cause the soil to retain humidity longer. Against it may be urged that trees lacking ventilation are more liable to the attacks of fungous parasites and noxious insects; nor must it be forgotten that the roots of the olive tree extend horizontally half as far again as the branches do, and as the diameter of the crown is usually equal to the height of the tree, close planting may stunt root development. The trees may be placed either in squares or on the diamond plan, as described when treating of orange culture. The most approved way of manuring olive orchards is to dig a small circular ditch around each tree; the manure (which must always be well rotted and rich in phosphates) is placed therein and covered with soil. The diameter of the circle within the ditch must vary according to the size of the tree, the object aimed at being to place the manure within the range of absorption of the outer rootlets. Manuring is usually effected once every three years, and the best time is the fall of the year. Plaster from old walls is a beneficial addition to the stable manure, and may also be spread within the circle surrounding the tree; and calcined bones in moderate quantities are known to incite growth and to greatly increase the yield. Gasparin states that 100 kilograms of manure produce about 3 kilograms of oil. Hidalgo Tablada, a practical agronomist and recognized authority on fruit culture, gives the result of his experiments as more favorable still. According to him, 100 kilograms of well-rotted manure

applied as above directed increased the product of each tree the first year by 2.50 kilograms, the second year by 3 kilograms, and the third year by 2 kilograms, giving for the three years a total increase of 7.50 kilograms. Irrigation is advisable only in dry districts or in times of drought; in ordinary years and in places where there is a moderate rainfall the grown trees thrive very well without it. Latitude does not furnish any secure guidance as to the benefit conferred by irrigation, and, as a matter of fact, the practice is more common in the north and center than in Andalusia. It must be borne in mind that irrigation has a tendency to impoverish the soil (by washing away the mineral constituents); hence, whenever it is practiced, manuring must go along with it *pari passu*. In Saragossa irrigation is much practiced, and so is manuring, whilst in Seville there is very little of either one or the other. If the orchards are properly and deeply plowed, two or three irrigations each year will be found sufficient. When, from the direction of the wind or other signs, there is apprehension of a very severe frost, copious irrigation will often preserve the trees from injury, as the evaporation from the soil has a tendency to mitigate the effects of a sudden lowering of temperature.

PRUNING AND RINGING.

Pruning olive trees is by many growers considered as the most delicate operation connected with olive culture, as well as the one upon which the prosperity of the orchard most depends. Independently of removing withered or injured branches, the purposes of pruning are the following:

(1.) The removal of the secondary and tertiary branches that only bear weak and sterile twigs, thus making room for the development of more healthy and vigorous ones.

(2.) The elimination of superfluous primary limbs, when they obstruct ventilation and light.

(3.) The general thinning out of the branches of certain varieties that have a tendency to extreme luxuriancy and to the intertwining of limbs.

(4.) The correction of the habit of producing very long vertical shoots (which are usually sterile), thereby favoring the forming of lateral bearing twigs.

For the cutting of larger limbs the following directions are given: Let the limb be sawn off even with the trunk, taking great care not to damage the edges of the bark, as it is those edges which are eventually to grow over and cover up the wound. In order to facilitate this healing process, the exposed part of the wood is made slightly concave, using a scoop-shaped chisel for the purpose; the wound is then plastered with a salve made of wet clay and cow-dung, which should be applied with a brush. It is very important that this work be well and neatly done, leaving no protruding splinters or irregular surfaces. The smaller branches may be cut with the hatchet, always taking great care not to remove any more bark than is absolutely necessary; and for the removal of shoots and twigs pruning-shears are to be used. In regard to the best time for pruning, the custom varies in different districts. Some writers on the subject contend that if pruning is effected when the sap ascends in the spring, the healing process is more rapid; others are of opinion that it is best to prune at the end of winter, and before the sap has begun to move upwards. It is, however, universally admitted that pruning is only to take place after the fruit has been collected and before budding has begun. Thorough pruning is generally only done once every two or three years, and as the pruned trees give a smaller yield

the first year after the operation, it is well to divide the trees into two or three classes. one of which is pruned and trimmed every year, thus dividing the work and equalizing the annual yield.

As a direct means of stimulating the production and ripening of fruit, the practice of "ringing" is recommended. The process consists in removing an annular strip of bark, varying from ½ to 1½ centimeters in width, from the base of secondary or tertiary flower-bearing branches, thereby preventing the descent of the sap, which is thus utilized for the formation of fruit. This operation, which must be performed when the tree has begun to blossom, but before the flowers are fully expanded and fecundation has begun, is of great usefulness with varieties that are given to "off years," or to exuberant flowering not followed by bearing. Individual trees, as well as varieties bearing scantily and irregularly, have been made to yield both plentifully and regularly by this process, which, however, like all pains-taking practices, is limited to a few careful growers.

CLIMATE AND TOPOGRAPHICAL CONDITIONS.

The olive tree in Western Europe thrives in the open air as far north as 46°—though beyond 44° it only bears irregularly and scantily; from that point the size of the tree and the regularity of yield increase as one proceeds further south until 18° is reached; beyond that latitude the tree grows luxuriantly, but does not yield fruit. Spain being situated between 35° 59′ 49″ and 43° 47′ 29″ of north latitude, the whole of its territory is within the limits of the olive region.

Observation has established the fact that the olive in order to mature requires a certain number of units of heat during the period of most active vegetative life, said period beginning with the first appearance of the blossoms and ending with the first severe frost. This number of heat units (each of 1° centigrade), which varies with different varieties, and ranges from 3,400° up to 3,978°, is to be computed by adding the mean heat of each day, during the period between blossoming (which requires a temperature of +19°) and the first frost. Any district in which the temperature will sum up to 3,978° during that period is therefore adapted to olive culture, provided the winter is not severe enough to kill the tree. In that sense the limit of its endurance is a temperature −7° to −8°, which, however, must not last beyond eight continuous days. Given the mean temperature of the summer months and the time of blossoming in any stated place, the time of maturity may be deduced; thus, in Seville the olive tree blooms about the 1st of May, and the mean temperatures are:

Month.	Days.	Mean temperature.
		° C.
May	31	23.8
June	30	24.1
July	31	29.2
August	31	30.1
September	30	29.3
October	31	27.3
	184	163.8

If we divide the number of degrees by six, we obtain the mean monthly temperature, 27°.3, which, multiplied by 184 (the number of days), gives

a total of 5,023°; hence the fruit in Seville usually matures about the 1st of October.

For Morata de Tajuña, 6 miles to the east of Madrid, where blossoming takes place at the end of May, the figures are:

Month.	Days.	Mean temperature.
		°C.
May	10	19. 2
June	30	25. 2
July	31	28. 3
August	31	26. 1
September	30	20. 2
October	31	14. 3
November	30	10. 2
December	31	5. 7
	224	147. 2

Giving mean temperature for 8 months 18°.4, which, multiplied by 224, gives 4,121°; hence the olive matures towards the middle of December.

Valladolid may be cited as a place where, owing to late blossoming and early frosts, the maturing of the fruit is impossible. Assuming blossoming to take place on the 15th of June, there will be:

Month.	Days.	Mean temperature.
		°C.
June	15	18.
July	31	26. 3
August	31	24.
September	30	20. 6
October	31	8. 5
	138	98. 4

NOTE.—In November the temperature falls to 4°.

Giving a mean temperature of 19°.7, which, multiplied by 138, sums up to 2,718°, less by about 700° than is required for maturing even the earliest variety of the fruit.

Altitude, in as far as it brings about a decrease of the temperature, is equivalent to latitude, and it is admitted that each 181 meters of height represent a change of climate equivalent to one degree of latitude, from which the conclusion may be drawn that olive culture can be carried on at high altitudes only in the southern parts of its habitat, and *vice versa*. In the vicinity of Madrid there are productive groves standing on ground that has 655 meters of elevation above sea-level. The latitude being 40° 24′ 30″, and 615 meters being equivalent to 3° 24′, the climatic conditions are those of latitude 53° 48′ 30″. In the province of Granada trees are found at an altitude of 1,000 meters above sea-level, representing 5° 31′ 30″, which added to the latitude of the district, which is 37° 11′ 10″, brings up the effective latitude to 42° 42′ 40″.

Exposure and incline are most important factors in olive culture. Exposure varies in its effects, both according to latitude and to local circumstances, hence no invariable rule can be given, though generally southern exposure is best, as being less liable to frost. In a warm, dry climate, however, trees thus placed will need irrigation in order to do well. Near the northern limits of the olive region, and on high

ground, where frosty nights are common in the fall, eastern exposure is deprecated, because in such situations the first rays of the sun bring about very sudden and abrupt changes of temperature. A quick thaw after a moderate frost will generally cause more injury than a period of more severe cold followed by gradual thawing; this accounts for the fact that after a spell of very hard cold the trees most injured are those most accessible to the rays of the sun.

As regards incline, it is held by most growers that slightly rising ground is preferable to a perfect level. The benefit from an inclined situation, with southern exposure, increases as one goes further north, as the obliquity of the sun's rays is thereby counteracted. The rise should, however, not exceed the ratio of 6 meters to 100, as on steeper ground cultivation by plowing becomes difficult and the soil covering the roots on the upper side of the tree is apt to wash away. At inclines much exceeding the above it is usually necessary to bank up the ground, thus creating a succession of small level terraces, involving much labor and expense, and also losing the advantage derived from the greater perpendicularity of the sun's rays upon inclined surfaces.

Natural or artificial obstacles to injurious winds, such as mountains, forests, or walls, shelter a certain extent of ground on their lee side. Spots sheltered on the north are usually considered as being benefited thereby to the extent of fully one degree of latitude. The ground sheltered extends horizontally in the ratio of 11 to 1, as compared to the height of the obstacle; thus, a mountain chain 1,000 meters high will shelter the land on its lee to a distance of 11,000 meters from its apex. Beyond that point, however, the injurious effect of winds thus impeded is more potent than it would be if the obstacle did not exist. The Sierra of Guadarrama, which rears its crest up to 2,385 meters, shelters its southeast exposure to a distance of 26,235 meters, but beyond that limit the action of the cold winds crossing its summits from north to south is felt most keenly.

The neighborhood of the sea is by no means prejudicial to olive orchards, and in the maritime zone, wherever the proper conditions of soil and climate prevail, olive culture is carried on in close proximity to the shore. The ancient dictum, laid down both by Latin and Arab authors, that olive culture could only be prosecuted within 30 leagues from the sea, has, however, been disproved by modern experience.

SOILS BEST SUITED TO OLIVE CULTURE.

It may be laid down as a general proposition that soil adapted to the vine is well suited also to olive culture. The characteristics of such a soil will be looseness and fair permeability, and for the olive it is necessary that the soil and active subsoil should have a depth of at least one meter. A calcareous soil, meaning thereby one which contains a large proportion of carbonate of lime, is considered valuable for olive culture, especially so in the south; in a northern district, where the summer is short, such soils are open to the objection of being cold, as their white coloring prevents absorption of heat. The presence of oxide of iron in such soil, by giving it a reddish tint, corrects this objection, and it is on such soils usually that great yields are obtained on the high central plateaus and in the north. Both magnesia and sulphate of lime are efficient substitutes for carbonate of lime—and some sulphate may always be advantageously applied with the manure. Oil produced on soils poor in these ingredients has usually a greenish tinge, and is not as limpid as oil from soils containing them. Potash is a necessary constituent

for olive culture, and when not present in sufficient quantity, must be artificially supplied. A tendency to exuberant flowering and aborting of the fruit, shows a deficiency of phosphates in the soil, which must be remedied in order to obtain good yields.

The hygrometric properties of the soil are an important factor, which, however, must necessarily be appreciated according to the general climatic conditions of the locality. Here it is held that in order to be well adapted to the olive tree, soil should retain its looseness after a rain of forty-eight hours' duration, and that during the hot season it should contain 10 per cent. of its weight in water.

FUNGOUS GROWTHS AND INSECT PESTS.

The olive tree is subject to a disorder which some years ago gave rise to considerable controversy, some authors holding that it was caused by an insect, while others ascribed it to the agency of a fungus. It goes by different names in different districts; in Andalusia it is spoken of as *melera*, *mangla*, *melazo*, *tiñuela*. *tizne* (smut), *accitillo*, &c., and in other parts it is frequently called, *negra*, *negrilla* or *negrura*, all meaning blackness, and indicating the outward appearance of the affected trees. The disorder is now generally believed to be caused by a fungus either identical or closely allied to the *Dematium monophyllum*, already alluded to as one of the most damaging parasites of the orange tree. Trees standing on very moist ground are especially subject to its attacks, though dry ground does not give immunity when the foliage is luxuriant; removing excess of moisture from the soil, and liberal pruning so as to admit light and air, are both preventive and cure for the disorder.

The olive tree has many enemies amongst the insect tribe, and the following is a list of those most frequently encountered:

The olive bug (*Lecunium oleæ*), which fastens itself to the green parts of the tree and sucks its juices. Pruning the infested limbs, and thereby giving free access to light and air, is the most efficient remedy, and the larger affected parts are to be smeared over with petroleum.

The olive moth (*Acophora olivetta*, also *Oruga minadora*) does damage chiefly in the caterpillar state. Bernard describes its appearance thus:

> It is about 7 millimeters in length, and is composed of twelve segments; the body is of the same color as the under side of the olive leaves and sometimes yellowish; its mandibles are at first black, and later on they grow yellow. It frequently penetrates under the bark of the twigs, and causes the formation of the s. c. *agallas* (gall-nuts) upon them. It also introduces itself into the fruit, eating the pulp and even the kernel itself. The perfect insect is greenish white in color, has four wings and two large antennæ. Careful cleaning and pruning, removing all visible nests, and the application of petroleum or of a solution of lime to the limbs are the means usually successful in fighting this pest. It seems to be established that this insect is never found on a tree infested with the olive bug.

The olive fly (*Dacus oleæ*) is an insect about 5 millimeters in length, yellowish red in color, with three black stripes on the abdomen, wings larger than its body, and of a golden color with black striæ. This insect lays its minute eggs upon the nascent fruit, and the worm burrows galleries into it and feeds upon the pulp. When the caterpillar has reached its full size, it resembles that of the olive moth, but it has only 11 segments instead of 12, and its mandibles are always black. When this insect has obtained a foothold, it is best to gather the fruit at once (even though it be green and yield but very little oil), as this prevents the propagation of the pest and may thereby avert more serious damage the following season.

The olive flea (*pulguilla del olivo*), derives its name from its peculiar

mode of rising, which looks more like jumping than flying. It is about 5 millimeters long, has transparent ovoid wings dotted with yellow, thread-like antennæ, and greenish abdomen. The larva, or worm, is light-green, with head of a dark red. It places itself usually on the petioles of the leaves and buds; its time of fecundation coincides with the blossoming of the olive. The larvæ are deposited on a layer of a whitish downy matter called by the country people *algodon del olivo* (*Anglice*, cotton of the olive tree). The insect's life does not last much beyond one month, but it causes many blossoms to fall off, and rain showers in blooming time, though in themselves prejudicial to the yield, are effectual in destroying the insect.

Two small beetles, respectively the *Hylesinus olesperda* and the *Phloiotribus*, are especially destructive to the soft white layer underneath the bark; the ova are deposited between the bark and the wood of broken branches, or after pruning. The perfect insects are about 3 millimeters in length.

The *Aspidiotus couchyformis* is an insect about 5 millimeters in length, ashy in color, provided with a proboscis with which it fastens itself to the bark of the tree in great numbers, generally, however, avoiding the leaves or tender shoots. This facilitates their removal by rubbing with a coarse mop or brush. As with all other noxious insects, petroleum is an effective remedy.

A small worm, commonly called *taladrilla* (*Anglice*, small borer), of which the perfect form is not identified, introduces itself into the stone of the olive, and, after devouring the kernel, makes its exit by way of the petiole, causing the fruit to drop off, usually in an unripe state. In this case, as with the olive fly, it is advised to sacrifice the year's yield and gather the fruit at once, in order to prevent the recurrence of the pest the following season.

HARVESTING, PREPARING, AND PRESSING.

The time of ripening varies considerably, according to locality and the species cultivated. When intended for pickling the picking in Andalusia usually begins about the middle of September and lasts till about the 10th or 15th of October. The fruit at that time has reached its full development, as far as size is concerned, but is yet green and hard. For oil pressing the harvest begins in November, and may last as late as early January. The usual mode of gathering is by knocking the fruit down with sticks, which is to be deprecated on account of the great damage done to the tender shoots on which the next season's fruit is to be borne. Careful growers pick by hand, which is less expeditious, but more profitable in the long run.

For pickling there are two processes in use.

The first one is the slow process, and the *modus operandi* is as follows: Place the freshly picked olives in fresh water, which must be changed every day, and let them lie thus about a fortnight. The water should be drawn off quickly and promptly replaced, not leaving the fruit exposed to the air more than is absolutely necessary. The water drawn off will at first be very bitter; this bitter taste will go on decreasing day by day, and the taste must be taken as a criterion as to when this process is to be considered completed, a fortnight or twenty days at most being usually the time required. The olives are then placed in a pickle made of salt and water, of a strength indicated by the French salinometer as 9°, found in practice to be equivalent to a proportion of about 1 volume of salt to 14 volumes of water. It is best to use butts or

barrels in which wine or brandy has been kept; those having been put to any other use are apt to give the olives the flavor of their previous contents; if new vessels are provided, they should be of oak, not pine, and they should be soaked about thirty days before being used. At the bottom a layer of olive twigs and leaves is first placed, which protects the olives from injury by pressure, and on the top of the fruit another similar layer is placed, taking care to have this layer well covered by the brine; the whole is kept down by some oak staves weighted with bricks or stone, all of which must of course be scrupulously clean, as any noxious taste or flavor imparted to the brine will affect the olives. The vessels should be covered with a cloth or tarpaulin, in order to exclude dust. Olives thus treated will be in good order for bottling or for consumption within about four months, and will keep sound certainly two years.

For pickling by the quick process a solution of caustic soda is prepared, this solution to be of a strength of about 4° of the French salinometer, and the fruit placed therein. After remaining in soak an hour, a few olives must be sampled, by cutting, in order to ascertain how far the solution has penetrated into the pulp; the depth of such penetration can be readily noticed by the color, and should not exceed half the thickness of the pulp; if after an hour this is not the case, other samplings must take place, at intervals of not more than ten minutes, until the olives are found to be in the proper condition. Then the solution is to be immediately drawn off and replaced by fresh water, which must be changed quickly three or four times, the fruit being allowed to remain in the last water for twenty-four hours. During that time the brine is prepared, and next day the olives are placed in it, following the same directions as were given when describing the first process. By this mode the olives will be ready for use within about thirty days.

In both modes of preparation the olives should after being once wetted never be exposed to the air more than a few minutes at a time; and to handle the fruit, ladles of wood or tin dippers should be used.

This gives a fair outline of the modes in general use for pickling, although undoubtedly some of the picklers have special recipes, upon which, however, no definite information could be obtained. It may be stated here that pickled olives in the Seville trade are at present roughly classed as *Manzanillas* and *Gordales*, meaning thereby, respectively, very small or very large (the latter being the "queen olives"), which names have no connection with the variety of the fruit put up.

Oil-pressing is carried on in many ways, some of them yet very primitive. The first pressing is done by means of a mill somewhat akin to a cider-mill; the pulpy mass then has hot water poured on it, and is subjected to a second pressing, which in the Seville district is now usually accomplished by hydraulic machinery. The refuse from this second pressing is used as fuel, and in some cases as a cattle food. Recently a new process has come into vogue whereby a further quantity of fatty matter is extracted, which is used for making soap. Where it is not thought advisable to utilize the refuse in any of the above ways, it will prove a very valuable fertilizer for the olive grove.

The yield of oil from a given weight of fresh fruit varies from 16 to 25 per cent.; the latter figure is not often reached even with the best oil-yielding varieties and the most improved processes. I have obtained data showing a higher percentage, but I believe that the figures expressed the proportion of oil to a given weight of olives which, as is usual in Andalusia, had been lying heaped up on the mill floors for several weeks, thus losing moisture and weight.

EXTENT, YIELDS, AND PROCEEDS OF OLIVE CULTURE.

The area covered by olive plantations in Spain is not accurately known. The official cadastral data are notoriously misleading, nor do they exist in any shape whatever in relation to some provinces; no professional economist would take them to be more than mere approximations, of which the factor of error would probably vary in every district, rendering any scheme of rectification extremely difficult. Hidalgo Tablada,* who bears the reputation of being a safe guide on such matters, makes the following estimates:

Area of olive groves	hectares..	2,099,651
Number of olive trees (80 per hectare)		167,972,080
Arrobas of oil produced (1 arroba† to 6 trees)		27,992,347
Value of annual yield (at 10 pesos per arroba)	pesos..	279,953,470
Gross product per hectare	do...	133.33

From which product he deducts 80 per cent. for cultivation, harvesting, pressing, interest, and taxes, leaving net income of 26.67 pesos per hectare (equivalent to $2.08 per acre). This extremely low average yield can only appear credible to those who, like myself, have seen miles of olive groves in a state of utter neglect, unprotected from the inroads of cattle or game, and in fact left to thrive or perish without the intervention of human agency save at cropping time. The province of Cadiz is a perfect wilderness of just such groves, and of course the product must in these cases be miserably small.

The province of Seville possesses a number of carefully cultivated groves, ranking probably in that respect along with the best, and the value of olive orchards in that district some fourteen years ago ranged from a minimum of rsvn. 500 ($25) to a maximum of rsvn. 4,000 ($200) per aranzada.‡ The value of a good orchard does not frequently exceed the latter sum at the present day, although the working expenses and income of an aranzada of that class, as given me by a planter from the Utrera district (Seville), seem to indicate a higher value. These figures—which in my opinion only apply to a small grove of exceptional excellence—are as follows:

		Pesos.
Gross yield—90 arrobas of oil, worth		675
Mowing	Pesos.. 10	
Pruning and cleaning	do... 60	
Harvesting	do... 75	
Pressing	do... 90	
Interest and wear and tear of plant	do... 100	
		335
Net		340
From which deduct taxes (about 20 per cent. of net yield)		68
Leaving net income		272

Equal to about $58 per acre.

The following data, in reference to a grove of 180 aranzadas situated near Ecija (province of Seville), show what, in my opinion, may be considered mean results of careful culture on a large scale:

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* He wrote in 1870.

† The arroba = 11½ kilograms = about 25 pounds avoirdupois.

‡ The aranzada = 37 57 ares, or 0.9284 of an acre.

*Fruit collected (in fanegas).**

	Fanegas.
1868	1,624
1869	1,045
1870	2,910
1871	2,784
1872	6,131
1873	2,346
1874	1,205
1875	1,317
1876	5,706
1877	820
1878	3,076
1879	920
1880	8,375
Mean annual product (equal to 16.35 per arranzada)	2,943

Taking the oil yield at 15 pounds per fanega of fruit, and estimating oil at 7.50 pesos per arroba (of 25 pounds), the average value of the harvest per aranzada will be 73.50 pesos (equivalent to $15.28 per acre). This estate previous to 1868 had not been carefully tended, and it is, therefore, fairer to take the mean of the last five years (1876 to 1880) as a standard, the extraordinary crop of 1880 being offset by the very small yields of 1877 and 1879. For this quinquennium the account stands thus: Total of five years' yield, 18,897 fanegas of fruit; annual yield, 3,779 fanegas; annual yield per aranzada, 21 fanegas, yielding 315 pounds, equal to $12\frac{3}{5}$ arrobas of oil, which, at 7.50 pesos per arroba, have a value of 94.50 pesos, equivalent to $19.66 per acre. Great as is the range of estimates in relation to the results of olive culture for pressing oil, it would be as nothing when compared to the variations in the figures bearing upon the raising of fruit for pickling purposes. I do not believe that authoritative data can be obtained on the subject, and I therefore think it best not to discuss the financial results of this branch of culture at all. It may be stated, however, that any farmer engaged in raising fruit for pickling would expect a larger cash income per acre than if raising for oil, both on account of the more perishable nature of the finished commodity and of the more contracted and more fluctuating market. Olive oil is a staple of the first importance in this country, of which any quantity almost can always be disposed of readily for cash. The pickled fruit is looked upon more in the light of a fancy article, the sale of which, it is true, is just now very brisk, but which some vagary of taste or fashion may any day render less readily salable.

EXPORTS.

The following are the latest official figures showing the exports of olive oil and of pickled olives from Spain:

OLIVE OIL.

Years.	Quantity.	Value.
	Kilograms.	*Pesos.*
Average of five years, 1877–1881	17,585,865	16,148,877
Calendar year 1881	24,625,487	22,901,702
Calendar year 1882	13,730,474	12,357,426

PICKLED OLIVES.

Average of five years, 1877–1881	1,574,309	787,154
Calendar year 1881	1,926,350	963,175
Calendar year 1882	1,722,945	861,472

* The fanega of olives weighs from 65 to 75 pounds, and yields from 12 to 16 pounds of oil.

The destination of these exports for the year 1882 is given as follows:

OILS.

	Kilograms.
Germany	956,417
Algeria	1,531,326
Belgium	63,663
France	3,123,874
Holland	53,208
Great Britain	2,189,611
Gibraltar	342,390
Portugal	760,093
Sweden	442,354
Cuba	2,824,990
Porto Rico	476,161
United States	80,596
Mexico	183,771
Argentine Republic	240,399
Uruguay	192,119
Philippine Islands	101,001
All other countries	168,501
	13,730,474

PICKLED OLIVES.

	Kilograms.
Algeria	142,508
France	58,727
Great Britain	146,868
Cuba	770,970
Porto Rico	104,625
United States	203,163
Mexico	31,563
Argentine Republic	141,016
Uruguay	33,797
Venezuela	17,851
Philippine Islands	38,982
All other countries	32,875
	1,722,945

ERNEST L. OPPENHEIM,
Consul.

UNITED STATES CONSULATE,
Cadiz, March 11, 1884.

CULTIVATION OF THE ORANGE TREE IN SPAIN.

REPORT BY CONSULAR AGENT LOEWENSTEIN, OF GRAO, ON THE CULTIVATION AND PROPAGATION OF THE ORANGE TREE IN THE PROVINCE OF VALENCIA.

[Republished from Consular Reports No. 33.]

I have the honor to forward to you herewith a report on the cultivation and propagation of the orange tree in this province. It was made out after consulting the most eminent cultivators and authors, and in order to answer many inquiries I received in a more extended manner than would allow in the limited space of a single letter. My fervent desire is that this paper may be useful to some of the lesser-instructed cultivators of this tree in the United States.

CLIMATE.

The orange tree does not thrive in the open air except above 43° latitude, and then in sheltered spots where the earth always preserves a temperature above congealment at a depth of $0^m.02$ to $0^m.03$. In these cases, the sap of the roots, which is always in movement in the trees of permanent leaves, even in winter, defends the exposed parts of the tree from congealment. The thermometer has been known as low as 10° Réaumur, without the orange trees perishing, because such temperature was not sufficiently continuous to penetrate to any depth in the soil, besides which the thaw that succeeded was accompanied with a cloudy sky. In short, the orange tree can be cultivated with perfect security in the open air where the temperature is not lower than 3° Réaumur. In the spots most favored this condition is not met with at a greater altitude than that of 400 meters. When the average temperature reaches from 15° to 16° the apparent vegetation of the orange tree commences, which, as a rule, takes place in the month of March. The blossoming requires a mean temperature of 18° centigrade, Réaumur, the first flowers appearing in April and frequently continuing throughout the whole of May. The blossoms are found on the secondary branches, but principally on the tertian ones, or in general those formed during the previous year, but this rule, which is the most regular, is not the same everywhere. Selling the fruit too late, and the consequent working and manuring of the grounds (by reason thereof) out of the proper time for so doing, besides which in consequence of the scarceness of irrigation in summer, for want of water, a great disorder in the natural course of vegetation is occasioned. With reference to the height above sea-level, the majority of the orchards range between four and thirty meters. The temperature of this province, Valencia, is very mild, and while it seldom reaches as low as zero, many parts are protected from north winds by different mountains.

The climate of the districts where the orange tree is cultivated in Valencia is, as aforesaid, benign, as is shown by the fact that the orange, lemon, citron, palm, locust bean, and various other trees, as also shrubs, all of which are delicate, thrive freely in the open air. Further, the jujube, fig, pomegranate, almond, and olive trees, the vine, and the sugar cane also flourish here luxuriantly. The dwarf fan-palm grows spontaneously.

The *résumé* of the meteorological observations made and published during the year from 1st December, 1881, to the 30th of November, 1882, at the observatory of Valencia, is as follows (barometer being in millimeters and at zero, thermometer of Réaumur, centigrade):

Meteorological observations.

	Millimeters.
Average pressure of barometer	762.97
Maximum pressure of barometer (January 17)	781.01
Minimum pressure of barometer (October 27)	745.94
Oscillation	35.07

	Degrees.
Average temperature	16.2
Maximum temperature in the sun (September 30)	43.0
Maximum temperature in the shade (July 10)	36.0
Minimum temperature in the air (December 27 and January 6)	1.1
Minimum temperature in the reflector (December 27 and January 6)	0.0
Average oscillation of temperature	13.3
Average humidity	61
Maximum of humidity (May 17)	94
Minimum of humidity (April 25)	20

	Millimeters.
e tension	11.0
um tension (August 19)	23.9
im tension (December 24)	3.0
e evaporation	9.1
um evaporation (July 8)	21.0
f evaporation	3,340.9
days	48
f inappreciable rain	22
days	7
f snow	1
ll during the year	420.5
ll, maximum (8 ptember 7)	92.0

	Kilometers.
e velocity of wind	283
um velocity of wind (February 26)	962
im velocity of wind (January 1 and August 30)	40

Frequency of the winds. (Observed twice during the year.)

	70
ast	134
	126
ast	105
	11
rest	37
	130
rest	117

Atmospheric state.

lays	167
days	97
d days	101
f calm	51
f breeze	274
f wind	39
f storm	1

rain when the weather is not stormy is nearly always accom-
l by south or southeast winds, and the rainiest months of the
or at least those when the rains which are most beneficial for the
ccur, are November, February, and April, although in consequence
great felling of trees, which has taken place during the present
ry, as also owing to unknown causes, the rains are much less fre-
than they were last century. In this province electricity exists
ery great extent in the atmosphere by reason of the dryness of
imate and the pureness of the sky, especially in the mountainous
cts.

SOIL.

greater portion of the soil in this region is tribasic, cretaceous,
rtiary, and contains a large proportionate admixture of clay, sand,
me, which is the true reason why the earth in this province is so
ertile, as is proved by the luxuriant vegetation, the variety of pro-
and the richness of this fortune-favored district. The color of the
in the parts where there is no irrigation is, in general, red, but this
es to gray when irrigation commences and manure is employed.
rts where vegetable refuse and abundance of farm manure form
eater portion of the soil, the color inclines to black.
soil should be at least one meter in depth and should be subject
gation. It should further be of a middle consistence, silicious-
aceous, or argillaceous-calcareous, rather damp, but without being

humid. Chalky soils, more or less pure, those completely silicious, and those which are compact argillaceous, with constant humidity, are useless. In the two first the manures decompose rapidly before being of service to the roots, and they require excessive irrigation, which weakens the soil and exhausts it. In the latter the excessive humidity which is constantly retained deprives the roots of atmospheric influence and causes putrefaction. A soil composed of clayey marl or a light clay mixed with sand is most suitable for the cultivation on a large scale of orange, lemon, and other trees of the same family. The soils where the orange tree thrives well are of very distinct compositions, as there are as many orangeries on sandy as on clayey ones, but those most compact should not contain more than 65 per cent. of fine earth (with less than 0.005 millimeter diameter), and on reaching this limit they should have a sandier earth for subsoil. The same extreme limits which the orange tree admits in its physical composition are also admitted by the soil with regard to the quantity of lime contained in it, for while in certain districts (Benifayó) the earth contains no carbonate of lime, in other parts 18.29 per cent. is found, and recently a calcareous earth has been examined, the same being of great depth, and has been found to contain 57.22 per cent. of said carbonate; notwithstanding the same, the orange trees thrive well. These earths are also rich in potash, and contain this matter in an exceedingly large quantity in a form that may be considered as assimilable with the tree, so that in such districts there is no necessity of employing potash for manure. Of the other alimental principles of the plants, there is in general a limited quantity of phosphoric acid, and in some parts an addition of magnesia.

The extraordinary foliage acquired by the orange tree in a loose soil, which at the same time contains what is necessary for its proper development, may be fully appreciated in the districts of Alcira and Carcagente, in this province, which districts are the center of production, and the soil in which is loose and of great depth. A simple analysis of a sample of earth taken from Carcagente showed that it did not effervesce with acids, whilst a sample from Alcira did, and abundantly. The analysis of 100 grams of earth from Alcira gave, salt of lime (carbonate), 20 per cent.; sand (silicate), 70 per cent.; clay, 10 per cent. This analysis, which was lightly made, is sufficient to give an idea of the soil in which the orange tree thrives to perfection.

Thus it is that in other parts (Castellon de la Plana), where the soil is most compact, the growth is slower; in years when there is a scarcity of water and the orchards are not irrigated at the proper season, the earth becomes so compact as to prevent the growth of the small life-giving roots, besides depriving them of the beneficial effect of the atmospheric air, and as these roots cannot then properly nourish the trees, the latter, little by little, harden, or, in other words, the trunk and branches lose the green color they should have, which manifests the abundance of sap contained by them, and which is what preserves them tender, a thing so necessary for their growth.

From the preceding it will be seen that it is necessary to well examine the soil (should one have the idea of converting it into an orange garden) before incurring any expense, not only examining the surface, but also the subsoil, as there may be some parts where the soil is loose and of good quality on the surface, but very compact and bad beneath, or *vice versa*. By attending to this the proprietor will know what may be expected from said ground and to what cultivation it would be advisable to dedicate it.

PROPAGATION OF ORANGE TREES.

Orange trees may be propagated the same as any other fruit tree, either from seed, which is the natural way of multiplication, or from cuttings, which is artificial. The first system, viz, from seed, perpetuates the species and gives origin to new descriptions, afterwards improved by cultivation. The second method, either from shoots, cuttings, or grafting, continues the race and at the same time accelerates the fruitage, which is always later with the trees produced by the first-named system, but in exchange the trees raised from seed are more robust and live to a much greater age. The oldest orange trees found in this province clearly demonstrate that the primitive trees were raised from seed. The sweet orange does not thrive well when raised from shoots, and in order to obtain a good result it is necessary to recur to tightly bandaging them so as to favor the accumulation of juices, which contribute to the acceleration of the unfolding of the underground shoots. The bitter orange is more easily cultivated.

The following means have been employed, and are still being used, as by the same frondose trees, bearing a large quantity of fruit, and this of good quality, are obtained. Said means are these: First, a flower-pot is obtained, composed of two pieces, which can easily be fastened together either with wire or strong twine passed round them at the top and also at the bottom. Then some straight branches of about the thickness of two fingers must be selected, and if said branches are very long they should be cut down to the length of 1½ meters; then the part that has to be placed in the center of the flower-pots is barked all round for about 1½ inches, and immediately bound up with esparto-grass cording. As soon as this is done the flower-pots are put together and filled with earth and stable manure, well mixed together and watered; after this they are watered once a week. At the end of a year the roots that have formed fill nearly the inside of the flower-pots, and then the branches at the lower exterior part of these are sawn off and the new orange trees taken to the spot where they are to be planted. For planting them there is only to cut the wire or string holding the flower-pots together, and if they are well looked after they will commence bearing fruit at the end of two years.

The slips of the sweet-orange tree rarely strike root, or at least such is the experience of farmers here who have tried it.

Till the disease of the orange tree occurred some years back, the propagation was generally effected by grafting the orange on a slip of lemon tree, but since then cultivators have only directed their attention to obtaining vigorous plants from the seed, on which are afterwards grafted cuttings; and the seed most preferred are *Niranjo dulce franco*, *Bigarrado franco*, and *Bigarrado Gallesio;* further, should short shoots be required, the trunk should be raised from the seed of the sweet orange. Those raised from the seed of the bitter orange either *franco* or that called *Gallesio*, are more vigorous, more luxuriant, and of longer duration, besides which they better resist the cold, for which reason they are preferred and chosen for the trunks of trees of tall growth. The fruit of the first named is considered the best.

The last system of propagation, being that adopted in this province, viz, grafting on a *franco* trunk, a series of operations takes place, such as the establishment of a nursery for raising plants from the seed, a plantation of young trees, grafting, and transplanting.

NURSERY FOR RAISING PLANTS FROM THE SEED.

The soil where this is effected must be of good quality, free from creeping herbs or weeds, and it must be in a good position so as to receive the sun in all parts, besides which it must have an abundance of water for irrigation. All seeds are sown in flat plots, and if they are delicate the soil is manured with a small quantity of well-rotted dung, finely minced so as to allow of its better distribution and at the same time produce more beneficial effects; the soil is also excavated and loosened so as to give the plant greater freedom for growing. These plots, when prepared, are opened out in parallel rows of about four inches deep and one foot distance between each.

The means generally adopted in this province for the establishment of these nurseries are as follows: The raising from seed, when on a small scale, is done in large boxes, but when on a scale of any importance it is done in the soil. This last is greatly preferred, because the plants have more roots on account of having more space for development. Although the temperature of this zone is very benign, it is nevertheless necessary to select a sheltered spot for the nursery, taking care that the soil be rich, nutritive, of sufficient depth, and possessing means for irrigation. Having everything prepared, the next thing is to obtain the quantity of seed required for sowing when the proper time comes round. The general method is to divide the orange with a knife, taking care not to cut it so deeply as to touch the seed, so as to in no wise injure them; these are then picked out and placed in the shade to dry, after which they are preserved either in paper packets or earthenware pots, in a dry place. Other methods for obtaining seed are adopted, but the preceding is considered as the best. Once the seed is perfectly obtained, should it not be required for use within a short time or period, it should be placed in layers in sand, so as to prevent its getting too dry and opening. A thing of the greatest importance is the selection of the orange from which to obtain the seed. Some nurseries have been planted with seed obtained from the November orange, and but few trees have been obtained, only a small quantity of seed germinating. The seed of more seasoned oranges come up in greater number and with more strength, in addition to which the plants are much more vigorous. Nurseries may be created with the June orange, the fruit at said period being perfectly seasoned, but this is considered too late, and the frost or cold would catch the plants whilst still very tender. The average season for planting the nurseries is from the middle of February till the middle of April, thus conciliating everything: first, because the seed then obtainable is good; and, secondly, there is sufficient time for the young plants to acquire sufficient strength to resist the cold weather ere the winter set in.

As the time approaches when the seed should be sown, the soil where such is to be effected is properly prepared, being watered, and, when in fit condition, well dug up. If the earth is very compact and composed of hard lumps, these are well broken up and smoked, and made up in *hormigueros*, which are heaps of dry vegetable refuse covered over with earth, having a small opening near the ground in which is introduced a wisp of straw. On setting fire to the straw the whole mass gradually consumes itself, forming a small heap of vegetable ashes and earth. The ashes of the *hormigueros* are equally distributed over the surface of the soil, and immediately afterwards this is manured with stable dung, which should have been left to rot in sand, and which must be old and as fine as the sand. This has first to be watered to keep it

moist, and when the proper season arrives a good watering has to be given it, after which it is spread over the surface. When the space to be cultivated is limited, the mixture of stable dung and sand is performed with a spade, and the ground is not plowed. The ground has to be divided in long and narrow plots, having small irrigating canals between each, which must be sufficiently deep so as not to allow of the water reaching the superficies of the rows, as should it do so it would have the effect of hardening the earth, which should always be loose, so as to obtain a good result.

The seed should be soaked in water for a couple of days, and afterwards thickly sown, to provide against the eventuality of some being defective and not germinating.

There are some who immediately cover the seed with a coating of fine manure of about 1½ to 2 inches, while there are others who employ a mixture of river sand and stable dung; but experienced cultivators say that the sand often injures the stalk of the tender shoot. It seems that in order to obtain the most favorable result a covering of earth from a pine forest, virgin earth, the greater portion dung. When this is not obtainable, then dry, arable ground which is very loose. Having arrived so far, two things are necessary, viz, that the soil be always damp, and that the earth covering the seed be loose, not offering any opposition to the unfolding and shooting of the tender plant. This is obtained by watering the nursery every two or three days after sunset, and still better by doing so before sunrise, using a watering-pot with a long spout.

When the orange trees are about two inches high or more, then irrigation by means of the canals at the sides of the rows will suffice.

The young plants are from 4 to 6 weeks before appearing above the surface, and sometimes more, and the plants are kept in the nursery for one or two years, according to the state of their development.

The chief things to be observed with the seedlings are: (1) The earth should always have a certain amount of humidity. (2) The plant should be kept perfectly clean, and should weeds spring up these should be rooted out with a small weeding-hook. (3) When the young plants come up close together they should be separated so as to admit the proper development of those which give promise of thriving, and allow those separated to thrive in other spots where transplanted. (4) If the ground is sufficiently manured the young plants have sufficient nutriment until reaching the height of about ten inches or even more.

If the soil is not properly manured, then it is necessary to assist the plant by using Peruvian guano, and for doing this various growers dissolve a small quantity of guano with the water in the watering-pot, and thus apply it to the plants; but should the watering take place by means of the small irrigating canals, the guano is placed at the entry of the water into said canals, and is thus conveyed all over the nursery.

PLANTING.

As soon as the young plants have acquired a certain development in the nursery, which sometimes occurs at the end of one year and sometimes at the expiration of two, the plantation has to be commenced. This generally takes place from the middle of February to the beginning of March, according to the condition of the plants. It is commenced by arranging the soil in the same manner as for the nursery, and when this is done the nursery is well watered, so as to enable the young plants to be rooted out without injuring them.

Some cultivators advise the taking up of the young plants with the

earth adhering as thick as mud, while others counsel that they should be transplanted with a ball of earth attached to the roots, although said ball be of small size, so that the plants should lose less. With a mountain knife, or other similar garden tool, a series of holes are made of superficial depth, to admit the roots of the young plants, which are placed in same conditions as they were in the nursery. The orange trees are planted in the plantation at a distance of from 40 to 50 centimeters apart, if wished to be of short trunk; but should the contrary be desired, they are planted at a greater distance from each other. On transplanting the young trees, a series of light beds are made and the trees are planted at the base of the same and in regular files, but on the opposite side of the beds to that where they are irrigated, thus preventing the water from reaching the young shoots.

Now and then the top soil is loosened with a weeding-hook, and thus the beds gradually get lower, until at last they are level with the surrounding earth at the time when the plants have taken firm root and are flourishing. The plantation is irrigated once in every three weeks in ordinary weather, but oftener should it be very dry; and about at the end of two or three months after transplanting, say in July or August, a small quantity of guano or of rotten dung may be applied. At the expiration of a year in the plantation, the young trees are sufficiently advanced for grafting, should they have been tended with great care and are required for trees of short trunk; but should they be required to be of long trunk, every means should be availed of for favoring the development of the terminal bud. To this end, every year, about June, by means of nipping, the too forward growth of the lateral buds is checked. In April, branches, leaves, and thorns on the lower half of the stem are cut off, as are also the lateral branches above the same which are vigorous.

This same care is bestowed every year until the stem, straight and devoid of knots, reaches a height of from 1½ to 2 meters, when grafting is effected on its upper part. Should any of the plants take a crooked direction, they are cut off in April of the second year at about 10 centimeters from the surface of the soil, when they shoot afresh during the summer, and when the shoots have reached a height of about 20 centimeters the most vigorous are selected and the rest done away with. In this province, trees of short trunk are those invariably grown, consequently this last plan is but little, if at all, availed of.

GRAFTING.

This is one of the most important means for the propagation of the orange tree.

Grafting consists in the insertion of a branch or cutting of one plant into another, which operation has to be carefully done, so that both may unite and ultimately form a single plant growing on the same stem. Grafting is also done on a plant with some of its own shoots.

Grafting is principally performed with the object of procuring flowers, leaves, wood, or fruit of superior quality or more merit than that previously obtained.

Grafting also serves for the propagation of many trees and bushes, both exotic, rare, and delicate, by employing specimens of wild, rustic, and strong plants that may be analogous, or of the same family, so as to improve the budding of the branches of a plant which has become stripped of same (in the regions where the cultivator wishes to augment the growth and reproduce the species), and also to unite on a single

branch the male and female flowers of vegetables normally "*diœcians*," which are thus converted into "*monœcians*," and their fertilization vastly improved. The "graft" is the name given to the shoot, or branch, &c., inserted in another, and "parent" is that in which it is grafted; and the plant obtained is called "franco" when both are raised from the same class of seed, and "bastard" when from different species. With all grafting it is necessary to put similar textures in contact, and above all the generating layers or vegetative zones of both parent and graft, and at the same time impede the access of air and light to the uncovered part, or the wound. It is not, as it is generally believed, the joining of the bark which contributes to the perfection of the grafting, but rather of that generative texture or *cambium* which exists between the white wood and the bark, by which is effected the growth in diameter of the *dicotlidonéos*, vegetable substances.

In order to obtain a successful result, the operations should be performed in fine and temperate weather. The parent plants should be carefully selected, not too young, as although the grafting might be successful, they would be long in bearing fruit, notwithstanding that they would be frondose; neither too old, because although giving fruit sooner, they are of little duration; further, those selected must be perfectly sound, well formed, and possessing a clean bark. There are four seasons when the operation of grafting may be performed, viz, at the impulse, at the time of shooting, at the time of vivifying, and when sleeping.

Grafting at the impulse is done when the movement of the sap commences and the buds begin to wake out of the lethargic state in which they had been all the winter, but before they have unfolded. The season for doing this is from the middle of February till the commencing of April, and it is done by grafting twigs of the previous year.

Grafting at the time of shooting is when the sap is at its greatest activity and when the shoot has attained half or three-quarters part of its definite growth. This system is generally carried into operation from the commencement of April till end of May, and the ingrafted shoot availed of is a tender shoot of the same vigor as that of the portion of the parent plant where it is to be ingrafted.

Grafting at time of vivifying is so called because it is done at the solstice and when the shoots commence to put forth their second sprouts, which occurs from about the end of May till the end of June. The cuttings for grafting on vivifying are selected from twigs of the same year.

Grafting when sleeping is done at the equinox in September, and only differs from the previous system in that the graft on vivifying commences immediately to shoot, whereas that grafted whilst sleeping does not commence to move until the following spring. This system may begin to be adopted from the end of August till about the middle of October.

A successful result greatly depends on the intelligence, skill, and care of the grafter, as also on other conditions that may be possessed by him. The young shoots to be grafted are frequently spoilt by workmen whose hands perspire copiously, and the same also occurs from bad breath either from disordered stomach or smoking to any extent, in the cases where the grafter is accustomed to hold the ingrafted shoots and buds between the teeth whilst preparing the *patron*.

The object of the ligatures is to subject and fasten the graft to the parent tree, and those are best which possess sufficient elasticity not to either tighten or loosen too much, as also suffer but little from atmospheric influences, and further they should be of slight cost and easy ac-

quirement, preference being given to those belonging to the animal kingdom, such as raw and carded wool, worsted, silk, or horse hair. Of the vegetable kingdom the following are best: hemp, flax, esparto, enea, reed-mace, various flexible barks, and the leaves of certain trees possessing the same property.

With the graftings it is necessary that the cuts and wounds in the *patron* should be properly covered and protected with substances suitable for said purpose, and which ought to combine the advantage of slight cost, easy manipulation, shortness in preparation, duration, and perfect protection. The materials most generally employed are the following: grafter's clay, which is of ancient use, and is composed of two-third parts of clayey soil and one-third of cow dung, well mixed together; and to this are sometimes added dry herbs chopped very fine, and by some a small portion of salt is also employed in the mixture. Softened pitch is also made use of, not alone, as it would dry and peel off, but melted with a corresponding quantity of wax or tallow, or of resin and tallow, to which is added red earth or brick-dust.

A good receipt for this mixture is as follows:

	Kilos.
Resin	1.250
Pitch	0.750
Tallow	0.250
Earth	1.500

This composition should be applied tepid, but not very warm, as in this case it would injure the plant.

When a good variety has been obtained from seed, it is so subject to injury or loss from any casualty that the plants are generally grafted in order to preserve them. When the cultivator wishes robust and bushy trees of long vitality, the grafting is done with trees of the same species, but should he wish to obtain trees less robust and either of medium size or dwarf, he does this (although at the expense of obtaining a tree of lesser duration) by grafting on analogous parent trees of a distinct species to the grafts, on account of such grafts requiring a greater quantity of sap than can be given them by the respective parent plants, for which reason they remain small, have but few branches and roots, and the buds are of but brief duration.

As a general rule two cuttings are grafted on the same trunk, sometimes with the object of greater certainty, and sometimes for the purpose of the trees sooner forming their top. With reference to the numerous buds that appear when the graft commences moving, all are suppressed except those nearest to where the grafting was made in order to draw the sap towards said point. Should they develop too much, the points are cut off, which is done when the graft attains a length of $0^{m}.15$.

The universal system employed in this province for grafting of orange trees is the following: If the nursery has been well cared for, at the end of a year the small free orange trees are grafted, whilst those which from some special circumstances have not sufficiently developed are left for the following year, and it is recommended that the grafting should be done in that part of the nursery where the plants are thickest, as being very close together impedes the moisture from disappearing from the soil, the sun not being able to penetrate through the plants to evaporate the dampness, as it can when the plants are scattered or isolated. This should be greatly studied in those parts where water is scarce in summer, and it is the plan followed by the majority of cultivators who have nurseries.

Nearly all systems of grafting may be employed with orange trees, but in this province the only one now universally adopted is that of the grafting of a bud, which gives excellent results, giving preference either to the method of *jouette* (*á ojo velando*) or to that of *vidry* (*de ojo dormido*), according to the season when the grafting is effected, viz, the first from April till end of June, and the second from August to October. One of the most intelligent cultivators of orange trees in this province grafts when the sap is moving, doing so from the time it commences to move until Saint Peter's day (end of June), and also when the sap is dormant, which is from August till October, cutting the shoot in February. The buds for grafting are taken from the center of the tree, as it has been found that if taken from the lower part the branches of the tree produced always incline towards the earth, and young twigs are not liked, as they produce large trees, bearing but little fruit. The buds for grafting are selected from those of the previous year and of the June shooting; and according to the size of the parent stem, one, two, four, &c., are placed, for should the parent stem be thick and have only one bud grafted on it, the excess of sap would suffocate it. On placing the buds, the parent stem is probed and they are applied to the most salient parts which this may present, because it is considered that it is here where there is the greatest quantity of sap, and it should be done when possible in the part facing the north, so as to suffer less from the heat of the sun; besides which one can work better. The grafts should be tied with esparto grass, this being found much better than other strings or cords by reason of the less damage it causes to the bark; besides which it better protects it. It remains in this state for twenty-one days, and if at the end of this time the bud continues green, the grafting is correct, in which case the shoot is cut off about four inches above, and it at once moves, if it has dried. Sometimes it commences moving before the grafting has thoroughly taken place, in which case it is immediately cut, although the twenty-one days may not have expired. As soon as the shooting commences, cut the esparto on the opposite side if there is only one bud, or at the sides if there are two, but do not take it off. It is calculated that about three hundred can be grafted daily, and when the grafting is done in fine weather it is much better, but it does not matter if done when raining, as neither through rains nor irrigation have the grafts been lost, although there are some who do not irrigate until at least twelve days after grafting. The four inches of stem which remain above the graft, and which served as a support for the growing shoot, are cut off at the end of a year, and before removing the plants from the nursery.

The proprietors taking but little care in providing themselves with good seed on grafting, and the grafter, whose only aspiration is to obtain his day's pay, taking everything that comes nearest to hand and costs him least trouble, it frequently happens that fatal results are the consequence. The same recklessness is noted with those who purchase orange trees already grafted and who take no trouble to ascertain their origin, &c. For the preceding reasons it is not surprising to see sickly orange trees in all directions, and others, although sound, producing but little fruit, and this of bad quality, thus occasioning a heavy loss to the imprudent and careless proprietors, which they could have easily prevented if they had not overlooked that the grafts inherit the good and bad qualities of the tree which produced them, as also of its state of sickness or disease, as also of its healthy condition; thus it happens that in a small field of only six hanegadas of loose earth, and the whole subject to the same cultivation, in which, by reason of the carelessness

of the owner, there are three descriptions of orange trees, each of different merit: there are some that give a flat fruit, with a fine skin or peel; others that are round and with a finer peel than the preceding, with abundant flesh, and as juicy as the former but sweeter; and lastly, there are others the oranges of which are very coarse and less esteemed by exporters.

TRANSPLANTING.

The tree lives, strikes root or the contrary, is more or less well formed, gives better or worse fruit, according to how the plantation may have been more or less carefully attended to, the health and duration of the plant being also subordinate to this operation. The outcome of the plantation does not only depend on the nature of the soil, but also on the age of the trees transplanted, as the younger they are there is much greater probability of their taking root. A soil well broken up is better for a plantation of trees than any other; but very few persons take this trouble, contenting themselves with opening holes at regular intervals in a slightly worked soil. The trees with horizontal branches, or curved at the tip, give fruit sooner than those that have vertical or nearly vertical ones. As a general rule the holes made in virgin earth and of the best soil are about a meter in diameter by one in depth, but in dry and hot soils they should be two meters in diameter by 1.30 in depth. These are made the winter previous to planting, in order that the earth extended and deposited round the edges, as also the sides of the holes, may improve from the action of the air; and in the neighborhood of each hole is placed about a cubic decimeter of well-rotted manure, or should this not be obtainable it may be substituted by four pounds of dried and pulverized blood, or six pounds of guano. Should the soil where the planting is to be effected be of bad quality, the half of the earth extracted from the hole is replaced with a similar quantity of clayey silicious or chalky clay soil. The manure must be perfectly mixed with the half of the best earth extracted from the holes, and the half of this is deposited at the bottom of the hole in the form of a spreading cone. The tree is then placed on said cone in such manner that the neck of the root, when the hole is filled in, will not be deeper than it was in the nursery, as should that limit be surpassed the root, being deprived of the action of the air, would only work imperfectly. The only exceptions to this rule are the transplantations to dry, arable ground, and in this case the neck of the root is placed at about five centimeters below the surface. Being thus placed, the roots are covered with the remaining earth that had been extracted, and the holes should be so filled up that the soil thrown in them should reach the height of six or eight centimeters above that of the surrounding surface, so that on settling down and becoming firm there should be no profundity at the foot of each tree, and the earth thus raised is arranged in a hollow. When the plantation is thus made it should be immediately irrigated, so that the earth should remain in immediate contact with the whole of the roots, and this irrigation should be several times repeated during the months of April and May, conformably as the weather may be more or less dry.

In this province the custom is to make the holes at the time of transplanting, there being few that anticipate this operation, and then the holes are only made of sufficient size to conveniently plant the young trees, for the soil not being virgin, it is neither necessary to work it so much nor for the soil or hole to receive the beneficial effect of atmospheric influence, as in the first case, which is indispensable. According to experts, orange trees do not require very deep holes, it

being preferable for their roots to be near the surface. Plantations of little depth thrive better; they give more fruit and are healthier; thus, placing the young trees the same as when in the nursery, and taking care that the grafts are from about 4 to 6 inches above the surface, the plantation is well done. After having completed everything necessary for the transplantation, the nursery is well watered and the young trees are dug out with a large spade, with a good quantity of earth adhering to the roots, which earth is surrounded with rotten or dried leaves and tied round with cords; and it may be mentioned, the speculating dealers take as little earth as possible from the nursery so as not to impoverish the soil. When the orange trees are conveyed to the spot for planting the first thing done is to line the bottom of the holes with the earth first taken out until it is calculated that on planting the young tree it will be, after irrigating the soil, at about the same depth as when in the nursery, and as soon as the tree is placed in position the virgin earth remaining round the sides of the hole is thrown in. There are some who throw in a basketful of burnt earth and vegetables, taking care that the same does not come in contact with the capillary roots, which form what are vulgarly called *cabellera ó barbada* (false hair, or bearded). If the plantation is done in November there is no necessity for employing more manure, that already made use of being sufficient; but in February, when the time for budding or sprouting approaches, a certain quantity of manure is mixed with the soil at a little distance from said capillary roots to oblige them to go in search of it, by which means they enlarge and gain strength. Before closing up the hole about twenty liters of water should be thrown into it if there is a probability of irrigating the orchard within a few days; but should the contrary be the case, a small quantity of earth is thrown on top of the twenty liters of water, after which a similar quantity of water is added. It is a matter of importance that the proprietor should be present when this is done, as it frequently happens that the water is thrown in so hurriedly that it does not reach the bottom of the hole, thus the roots of the orange tree do not come into contact with it and are consequently either longer in developing or else dry up and die. On planting it is absolutely necessary that the earth round the roots should be like mud, so as to prevent any *contretemps*, and later on, when the time for irrigation arrives, the whole surface is watered and now and then is dug up, the condition of the soil being improved little by little by fresh tillage, the ground around the trees being kept well free from weeds. The soil should be kept sufficiently damp, and the orchard should be irrigated at least twice a month should the weather be dry. There are some who plant the young trees just the same as when taken from the nursery, while there are others who lop off the branches and cut off about 9 inches of the tree in order that it may sooner commence budding; but this it is not always necessary to do. If on rooting up the young trees some of the roots are injured and have to be cut off, if there are many some of the branches should also be done away with, there being an intimate relationship between the roots and branches; hence it is easy to understand that if on transplanting a young tree the roots are nearly intact there is scarcely any necessity for cutting off or reducing the branches, while, on the contrary, if a portion of the roots has to be cut off, the branches should be proportionately reduced.

CULTIVATION OF THE ORANGE TREE.

The orange, the same as all other fruit trees, may be submitted to two different systems of cultivation: *extensive* or large cultivation,

which means planting the trees at a good distance from each other, and availing of the intermediate soil for other crops, and *intense*, which is the cultivation in gardens, where the trees of short stems are planted close to each other and subjected to very careful operations This latter system of cultivation is more costly than the former, but the results obtained are more certain, better, and more abundant. For extensive cultivation, plants of about the height of from one meter fifty centimeters to two meters, and a diameter of about three centimeters, at a distance of a meter from the surface, are selected, and if only a single row is to be cultivated there is no need to trouble about how the trees are planted. Should the plantation consist of various rows close together, either the threefold system is adopted, each three trees forming an equilateral triangle, or else that called *marco real*, which is when each four trees form a perfect square. Employing the first system, more trees can be planted per hectare, and the soil can be tilled in three different directions, while in the second case it can only be tilled in two. When only one row is planted the trees are placed at a distance of about six meters from each other if the soil be rich, and at only five meters if it be middling. Should intense cultivation be adopted, the trees are planted at a distance of from three to five meters from each other. In many parts of the province of Valencia the *marco real* of six meters is adopted, 276 trees being planted per hectare.

CULTIVATION OF THE ORANGE TREE DURING THE FIRST YEARS.

As soon as the transplanting has been effected, which generally occurs during February and March, the formation of a garden should be attended to without delay, so as to have the plants in a productive state. The rule observed by cultivators in this country is so notably different as to confound the most practical gardener, but that which has been adopted by various intelligent cultivators, and which has obtained the best results, is the following:

First year.—Ridges are formed at the sides of the rows of orange trees at about the distance of 75 centimeters from the trees. In the month of April the trees are each manured with one or two pounds of guano, or else with stable dung, or sewage, at the distance of about 50 centimeters from the trunk, to which a trench is dug around it, in which the manure is placed and afterwards covered over. The orange tree thus receives the irrigation from the space between the ridges, the rest of the earth remaining intact; thus the trees are prevented from getting dirty, and both work and money are economized. When the season for irrigation arrives a thorough weeding takes place; thus the soil is cleared and continues clean. The irrigation is continued at its proper time, in order that the trees may not suffer, after which the corresponding weeding is effected.

Second year.—In February, previous to the moving of the trees, two or three pounds of guano, or stable dung, is given to each tree as aforesaid, but placed at the distance of 75 centimeters from it, or, in other words, at the edge of the ridges. Later, one or two baskets of any kind of manure are distributed around each tree; this may be done in April, which is the best month for doing it, but at any other time it may also be effected. The necessary irrigation and weeding must be strictly attended to, so as to preserve the orangery in good condition, and should any tree bear fruit, this should be plucked.

Third year.—In this year the young roots of the orange trees have reached as far as the ridges and the trees commence bearing fruit,

which should be plucked as soon as saleable, before Christmas, if possible, so as to be able to work the soil in February. There are some who counsel the plucking of the fruit as soon as it appears on the trees, without waiting to derive pecuniary advantage from it, leaving this for the following year. The ridges are now broken down, the whole superficies irrigated, and *hormigueros* are made. At a distance of a meter from the trunk of each tree small holes are dug with a spade, and after placing two or three pounds of guano in each they are covered up. After doing this the *hormigueros* are spread over the surface, the soil is irrigated, and at the opportune moment the ground half way between the trees is plowed, great care being taken that the plow does not touch the roots; the earth all round the tree must be well weeded and loosened to about the depth of two inches. Watering, plowing, and weeding throughout the year.

Fourth year.—From the previous year, the cultivation to be given to the orange tree when in a state of production has already commenced. The fruit is plucked as soon as possible. *Hormigueros* are not made this year. The soil is dug up or plowed from twice to four times, and is manured. The principal manure employed is guano, of which about thirty-six kilograms per hanegada are used. But should stable dung be employed, about six basketfuls are given to each tree, and it may be mentioned that there are some cultivators who use more manure during these first years. Pruning the orange trees is now commenced, the same being confined to a cleaning, and this should be effected between February and May, preference being given to the earlier months of this period. This is henceforward repeated every year, and, in order that the wounds occasioned to the tree may be of easy healing, the branches or shoots pruned off are always the thinnest or most delicate. Should the trees be required to be low and wide, the cultivator limits himself to checking their upward growth and favoring their spreading.

Certain intelligent observers maintain that it does not in any way prejudice the tree to lop off all the lower branches, which there is a certainty that if allowed to grow will rest on the ground as soon as they commence bearing fruit, thus impeding the necessary tillage. With reference to the remainder, it is prudent that they should be respected, and even the whole of them left untouched should it be noted that the tree does not suffer in its growth from an excess of branches, as said branches will later on distribute themselves, being obliged to do so from the weight of the fruit on them, and then a fitter pruning can be effected and the trees left in the condition in which they ought to be, the branches prejudicial either to the tree or its development being easily removed. The want of attention to this is the cause of various pruners finding their trees when least expected with fewer branches than the trunk could nourish, and consequently yielding less fruit than they ought to do.

The pruning is another of the most important operations of arboriculture, and very important in the cultivation of orange trees, for the following reasons, which it has for object, viz:

(1.) To give the tree a regular, elegant, and graceful form, with relation to the spot where planted and the space occupied by it.

(2.) To obtain from the whole of the principal branches a series of smaller secondary ones, bearing floral or fruitful buds.

(3.) To make the fruitage more equal and at the same time proportionate to the strength of the tree, care being taken to avoid intermission.

(4.) To augment the bulk of the fruit and contribute towards the same

being more savory, on account of its juices being obtained with greater care and more completely.

CULTIVATION OF THE ORANGE TREE WHEN IN FULL PRODUCTION.

As has been seen, little by little many modifications have been introduced in the cultivation of this tree as it goes on developing. When the tree is in full production the cultivation is as follows: If the orchard is small, *hormigueros* are made one year, and the following one manure is employed; but should it be large, *hormigueros* are made in one-half and the other half is manured. The following year the part where the *hormigueros* were made is manured, and in the other part where the manuring was effected *hormigueros* are made, and this system is successively continued alternately. Should the fruit be sold at Christmas, the soil is worked in February and March; but should the fruit not be sold at said period, the only thing to be done is to wait till it is plucked and then work the soil when possible. As soon as the tree is bare of fruit, the pruner commences his work, the best time for this being the end of February and during the whole of March. All dry branches are cut off, as are also all rickety shoots and the crooked branches which cross one another, and some of those from the center, when there are many close together; in short, all those branches that are calculated to prejudice the tree. The orange trees must have sufficient space between each to allow of good ventilation, and they must be properly protected to enable them to resist the abrupt changes of temperature and at the same time give the full quantity of fruit they ought to yield. An excess of wood is prejudicial to the luxuriance of the trees, as likewise to their production, for which reason cultivators endeavor by pruning to widen the scroun of the tree, and check its growth in height. In September, before the trees begin to bud, they should all be well examined to remove all the young twigs that may have formed, only leaving such buds as are well placed for forming branches in the empty spaces there may be. This custom is very much neglected, for which reason trees are very frequently seen with twigs which have rendered useless the principal branches, thus disarranging the good order these should have in their proper distribution. One thing the pruner of orange trees must bear in mind is the following, viz, that the branches of these trees bear a heavy fruit, which makes them incline to either side; but there are some who do not take this into account and prune some of the branches that ought not to be touched, only fixing their attention on the place they occupied at the time of pruning, which was different to that where they previously were. Those who are not partisans of low trees, like the cultivators here, allow the orange trees a greater development and do not punish them so much in the pruning.

As soon as the pruning is finished the working of the soil is commenced. This is watered and dug up, and *hormigueros* made where they correspond, which last work should be carefully attended to, otherwise the farmer will spend both time and money uselessly. The *hormigueros* give very good results in strong and damp soils, but they are of little use in those that are sandy and dry. A sufficient quantity of combustible should be employed and the earth so burned as to be neither too much nor too little so, but at the same time be blackish. This operation must be effected slowly and with great care. In the orchards where guano is employed, which is thrown round about the trunk, the *hormigueros* are made in the parts where said manure has not been used, so that the same may benefit thereby.

In the orchards manured with stable dung, which manure cultivators are accustomed to throw down in every row between each orange tree, the *hormigueros* are made in the clear spots that have not been manured. The part of the orangery that is manured is worked as follows: Some farmers irrigate the ground and when the proper season arrives throw down the manure, digging up the soil with a spade to the depth of 25 to 30 milllmeters in the clear spots, and only 2 or 3 inches deep in the vicinity of the trees. As this is being done, men go behind and level the surface with a species of narrow hoe, in order that the earth may be more united and better preserve its seasoning. Other cultivators commence by making a string of ridges from one to the other side of each row of orange trees at the distance of the extremity of the branches, and when this is done they throw down the manure, which, if in small quantity, is spread from the outside towards the trunk, or, if in large quantity, all over the space between the ridges. As soon as the manure is properly distributed the ground is irrigated, care being taken that the water enter gradually and equally, so as not to wash or carry away the manure, but let it remain where put. At the proper season the earth is burned over, and all thus mixed together. This latter system is preferable to the former, inasmuch as the water commences to dissolve the soluble portion of the manure, which thus at once penetrates the soil, and, the insoluble part being well soaked, is better mixed afterwards with the earth.

With reference to the first system, it frequently happens that the manure is spread over spots not yet properly seasoned, and in this case the surface manure or that at a small distance from the superficies is destroyed by the rays of the sun, a loss which is avoided by employing the second method.

At the expiration of a month or month and a half, should it not have rained, and the weather continue fine, the orangery is again irrigated. After watering at the proper season, two plowings are given to the soil between the extremities of the branches of one tree and another, care being taken that the plow does not touch or injure the branches, and a good weeding is given to the ground round the trunk and under the branches. There are some orangeries where the plow cannot be used on account of the trees being so thickly planted, the branches of one tree almost touching those of its neighbor. In these cases the soil is slightly dug up with a spade. This cultivation is continued throughout the year till the month of October, when the orange (fruit) begins to turn yellow, and then the plowing work is suppressed by many, who only keep on weeding to keep the surface clean. At this period of the year great care should be taken of the capillary roots, which if cut, the tree suffers and the fruit falls off.

The person who has to direct the cultivation of an orangery must always be on the watch, both as regards the weather and the state of seasoning of the soil. Should the earth be sufficiently moist, and there be signs of wet weather, or it be thought that the ground can pass some time longer without irrigating, this is not effected, and thus the cultivator economizes the cost of the labor necessarily attendant after each irrigation. Should the weather be cold the orchard is irrigated if possible, and thus the trees do not suffer so much from it. Should a period of dry weather be followed by a lowering of the temperature at the time when the orange trees are not fully seasoned, the fruit is likely to get frozen, and, to however little an extent this may occur, the orange is useless for shipment. It is always advisable for the proprietor of an orangery to have the irrigation done by a person that thoroughly under-

stands it, so that the water may only enter the field with the required current, in order to prevent any of the surface soil being swept away, as also to avoid the formation of any pools, especially about the foot of the orange trees or in close vicinity to them, the same being exceedingly prejudicial. According to the opinion of many experienced cultivators the orchards about Valencia may pass from four to five weeks during the summer season without being irrigated, but this should not be delayed longer, as it would only redound to the detriment of the fruit, which would not thrive as it should do. In the winter the gardens can be well left for eight or nine weeks without irrigating.

Water is so scarce in some parts in summer that frequently two months or even more pass without it being possible to irrigate the orangery, in which case the orange trees suffer a great deal and the fruit is small, thus causing a loss of importance to the grower. By giving a much deeper tillage the evil is in great part avoided, but exceeding care must be taken not to cut any of the roots, or should such occur that it should not be to the extent of causing the trees to suffer therefrom, for which reason it is best to perform the tillage gradually and by piecemeal. There are some plantations so exceedingly superficial as not to admit of deep tillage; thus the seasoning only produces effects of short duration, and when it rains said plantations scarcely benefit from the nutritive elements washed down and deposited by the rains on the surface, for as soon as the sun shines the greater portion are rapidly evaporated, having penetrated but such a short depth into the soil. These do not admit of any improvement; but it must be borne well in mind that the greater the quantity of earth turned over on planting, the tree to be cultivated has more nutritive elements, and, at the same time, requires less water for thriving.

Although all the trees of this species greatly love water, so much so that without it they cannot live, still great care must be taken not to let them have too much, as, unless graduated with the greatest rigor, it does them harm; consequently it has to be arranged according to the season and the position and quality of the earth, so that, on an average, and reckoning on soil suitable for the vegetation of these trees, it will be sufficient to irrigate the gardens once in every twenty days in summer, and suspend it during the autumn and winter. Should the earth be at all compact it is only irrigated occasionally, but should it be loose it requires it oftener. In general, the degree of watering given to the soil should be sufficient to maintain the leaves smooth and straight, without being twisted; should the irrigation be carried beyond prudent limits it is detrimental to the tree; and it may be easily known when the waterings are too frequent or exceed the necessities of the tree, as the leaves commence turning yellow.

HORMIGUEROS.

All cultivators are unanimous in agreeing that the *hormigueros* give excellent results in the cultivation of the orange tree in this zone. The orange tree itself shows by its wider and deeper colored leaf how much it benefits from the *hormigueros*, and there are many who believe they contribute in giving consistence to the fruit. For the preceding reason the owners of vineyards preserve the cuttings of their vines, preferring the ashes of these to those of other vegetables. By these means the physical properties of the earth are greatly and favorably improved, and in addition to the seeds and roots of weeds being destroyed, so are also various insects and their grubs, besides which a quantity of vegetable

ash is obtained, the use of which has always been greatly recommended, as amongst other elements the earth receives a quantity of potash, which is of great importance to plants. Notwithstanding the preceding, the system of *hormigueros* is not suitable for all classes of soils, but it is to be preferred for those which are argillaceous, and the result will be much better with those which are red and humid.

The application of *hormigueros* to light, sandy soils, which are naturally acrid and poor in organic substances, always produces fatal results; but, nevertheless, there is an exception to this general rule, for chalky soils may be improved by the use of *hormigueros*, when done with prudence, as by the action of combustion a portion of the chalk is converted into quicklime, and the same result is obtained as if the earth had been calcined, but in this case it is necessary that the manure should be applied previous to the *hormigueros*, which is the method adopted in various parts of this country.

MANURES.

This manure is largely employed, as by the use of it the development of the orange trees is advanced, and they give a larger yield. Its use gives excellent results in the young gardens where the trees are weakly, but in the orangeries, where the ground is in itself rich, it contributes towards the fruit being swollen or blown. The quantity of guano employed varies according to the state of the orchard. In general, a bag containing from 60 to 70 kilograms is used per fanega, but there are some cultivators who use double this quantity. The number of trees planted per hanegada varying so much, some growers have adopted the rule of putting about 4½ kilograms to each tree; thus the manure of each costs about 5 or 6 reals. If the guano is thrown down dry, small trenches are dug round about each tree, in which the guano is placed and afterwards covered over, but should there be a good supply of water at hand, the guano is strewn over the earth under and round about the tree, and the garden is immediately irrigated.

The composition of the principal guanos may be, on an average, represented as follows:

Guano.	Ammonia.	Phosphates.	Azoe.	Nitrates.
				Per cent.
Chincha Islands	17 to 18	24 to 26	15 to 16	4.70
Tchabo Islands	7 to 8	30 to 32	8 to 10	4.70
Chilian	5 to 8	37 to 40	6 to 8	6
Patagonian	2 to 3	44 to 46	6 to 8	6
Baker's Islands (Pacific)	.....	78 to 85	0.3 to 1.2	3.5

It will be seen from the preceding there are some guanos which are very rich in phosphoric acid, and contain but little ammonia, whilst in others the ammonia predominates, and the phosphoric acid is much less. Potash is found in but very limited quantity, and in some guanos there are no traces of it, as happens with the guano from the Lobos Islands. Magnesia is also met with, but in small quantity.

The organic substances are of easy decomposition, and cause the formation of carbolic acid, which, decomposing the silica of potash in the soil, liberates both the silica and the potash. Should the soil be poor in potash and magnesia, it soon becomes barren, although the quantity of guano may be increased. This should be well borne in mind in the cultivation of orange trees, rice, and sugar-cane.

Guano cannot by any means replace good stable manure, but it is one

of its best complements, its action being immediate, due to the great solubility of its principal fertilizing elements. Owing to the preceding, the action of guano is of but short duration, and unless alternated with other manures, such as vegetable ashes, phosphates, stable dung, &c., the soil soon becomes exhausted. It is a very good custom to mix the guano with stable manure, as, in addition to economy, and the facility and equality with which it can be spread in this manner, the results obtained are more beneficial, because, without lessening its efficacy, it neither burns nor destroys the young plants, although these might come in contact with it. By means of practical trials it has been found out that 10,000 or 14,000 kilograms of stable dung mixed with 150 or 200 kilograms of guano produce much more satisfactory results than 30,000 or 40,000 kilograms of stable dung used alone, and that the earth afterwards remains in a better condition for later culture. It has been proved that a ton of guano (1,000 kilograms) is equal in fertilizing effects to 33½ tons of stable manure, to 21 tons of horse dung, to 33½ of cow dung, and to 14½ tons of human excrement mixed.

One of the most perfect known manures is human excrement. In this is found all the elements required by vegetables, and in such a state that their assimilation takes place with rapidity, their effects being equal. Fecal matters are required as much for strong as for light soils, but nevertheless a distinction should be made, viz, when the excrement is in a desiccated state it is applied to argillaceous soils, and when fresh the preference is given to light ones. The fecal matters are very energetic, and their action on the vegetation is rapid, brisk, and of short duration, but whilst contributing powerfully to the first development of the plants, they weaken the strength of them during their latter period. In short, it is a manure which quickly gives what it has to give, leaving little or nothing behind it. That human excrement is one of the most perfect manures is proved by its composition. According to Boussingault, 100 kilograms of human excrement in an ordinary condition contain 75 kilograms of water and 24.90 kilograms of dry matters, the principal elements being:

Oxygen, hydrogen, and carbon	20.10
Azoe	0.40
Phosphoric acid	0.20
Potash and soda	1.50
Lime and magnesia	0.70
Silica and other substances	2.00

.On evaporation of the water, an inert matter of which it is despoiled as soon as possible, and considering only the dry matter contained in it, its composition is as follows:

Organic matter per 100 kilograms	80.14
Mineral matter per 100 kilograms	19.85
Lost	0.01

The organic matter contains 78.66 carbon, oxygen, and hydrogen, and 1.48 azoe. The mineral matter contains 0.82 phosphoric acid, 11.00 alkaline salts, potash, soda, and lime, and 8.04 of silica and loss. In short, all the substances that enter into the composition of vegetables; above all, the azoes, soluble phosphates, and alkalies, especially potash.

According to the experiences of Hermsbtael and Schubler, it has been proved that the soil without manuring of any description can produce the seed 3 times, but if manured with vegetable manure, 5 times, and if manured with common stable manure, 7 times, and if manured with pigeon dung, 9 times, and if manured with horse dung, 10 times, and if manured with human urine, 12 times, and if manured with solid excrement, 14 times.

The employment of manures is indispensable for activating the development of the orange tree and maintaining its fertility. Without them its growth would be slow, and it would soon be loaded with fruit of small size, which would exhaust the tree by reason of its abundance, and cause it to succumb long before giving its maximum produce.

The orange tree requires to be manured at two periods of its existence: During its first development it should receive it in abundance so as to activate as much as possible the formation of its branches and at the same time obtain its maximum production. Afterwards, during the remainder of its existence, only the necessary quantity for its proper preservation and nourishment should be given it, its state of vegetation indicating the frequency with which it should be manured and the quantity to be given it. In the first period of vegetation of the orange trees manures of rapid decomposition should be employed, so that they may immediately proportion to the roots, and in abundance, the nutritive elements required by them. Such manures are the following, viz, well-prepared dungs, pigeon manure, the skins and refuse of oily seeds, guano, desiccated blood, and fecal matters. In the second period the manures of slower decomposition should have the preference, and these are horn raspings or scrapings, crushed bones, old woolen rags, horse hair, and the hair, tendons, and waste of tanning factories. The effect of these last manures endures for from five to eight years. Both classes of manure are distributed over the surface soil supposed to have roots underneath, and particularly over the parts reached by the radical extremities, which is to say within the circumference covered by the branches of the trees. These manures are buried in the soil, about the end of October, at a depth of from 25 to 30 centimeters. Liquid manures are also sometimes employed, such as fecal matters, skins, and refuse of oily seeds, and guano, the whole mixed together with a sufficient quantity of water, but the effect produced is immediate and of short duration. These should not be made use of except during the heat of the summer and at the moment when the vegetation is most active, for if applied during the winter they might lead to the putrefaction of the roots. In general, they are not resorted to except for such trees as appear languid and seem diseased, and a trench of about the depth of 5 centimeters is dug around the spot where this liquid manure is to be placed, which is afterwards covered over. In order that the earth may be fertile, it should contain all the necessary elements required for obtaining the proper development of the plant that has to be cultivated in it, and these must be in a perfect state of assimilation, but compost and vegetable and animal remains that may be added to the earth in the shape of manures do not return to it the principles lost by it yearly with the crops raised; and Liebig, seeing that in all countries the agricultural production was diminishing, commenced a series of studies to ascertain the cause thereof, the result being such as to clearly demonstrate what was taking place. He found out that all plants required to assimilate a greater quantity of phosphoric acid than that contained in compost, and consequently proposed the employment of bones and natural phosphates, as also mineral phosphates, coprolites, &c. Hence the necessity of mixing or alternating complete with incomplete manures, so that the earth may always retain its fertilizing properties.

The method for calculating the substances which in the shape of manure should be given to the soil as a necessity, after the collection of each crop, is as follows:

1st. The cultivator should avail of all the vegetable manure obtainable from the refuse of each crop, to which should only be added the fixed principles of the fruit, the nitrogen required by it being supplied by the

ammonia in the air, as also that remaining on the surface soil after being washed there by the rains. To ascertain, in this case, the quantity of nutritive principles required to be incorporated with the soil, the probable average weight of the fruit to be produced each year should be calculated, having ascertained which, and taking into account the weight of ashes, this problem is easily solved. Knowing the weight of the ashes of 100 parts of the fruit, a proportion is established which will give the required result.

2d. Should the cultivator not wish to avail of the vegetable refuse of each crop, he should add, first, the fixed principles of the fruit, and, secondly, the fixed principles of the branches and leaves. An analogous calculation to the preceding will give the sum of nutritive principles to be added to the soil in the shape of manures.

3d. The case where the cultivator only utilizes a portion of the vegetable refuse. Knowing the total quantity of leaf and branches obtained with each crop, by difference may be ascertained the quantity of leaf and vegetable refuse that is not returned to the soil, and with this datum may also be calculated the nutritive principles that should be administered, which will be:

1st. The fixed principles of the fruit.

2d. The fixed principles of that part of the leaves and branches that are not utilized as manure.

3d. The quantity of nitrogen contained in the leaves and branches which is not availed of for manure.

The study of the orange tree has determined by analysis that its ashes give the following results per cent., viz:

Composition of the ashes of the fruit.

Constituents.	Mineral manure.	Compost.
	Per cent.	*Per cent.*
Potash	20.15	15.28
Soda	10.22	12.14
Lime	30.12	30.24
Magnesia	9.02	8.10
Phosphoric acid	20.04	18.24
Sulphuric acid	1.08	4.14
Silicic acid	4.50	5.82
Oxide of iron	4.25	4.75
Loss	0.62	1.29
	100.00	100.00
Ashes of the fruit.....per 100..	3.57	3.45

Composition of the trunk, branches, and leaves.

Constituents.	Trunk and branches.	Leaves.
	Per cent.	*Per cent.*
Potash	14.15	10.18
Soda	10.67	10.82
Lime	31.57	41.22
Magnesia	10.64	6.94
Phosphoric acid	18.82	19.67
Sulphuric acid	4.89	4.53
Silicic acid	2.82	5.48
Iron and loss	6.44	1.76
	100.00	100.00
Azoe of the leaves.....per 100..	1.57	1.00
Ashes of the leaves.....do....	6.32	6.20

The orange trees analyzed were from Alcira (Valencia); some manured with compost and others with mineral manure. The proportional difference noted between the assimilative nutritive principles is not to be wondered at, for, as has been observed, this varies with the same plant according to the nature of the soil and the manure employed.

DISEASES OF THE ORANGE TREE.

The development of disease in the orange trees is greatly contributed to by atmospherical phenomena, various insects, and parasitical plants, as also the neglect or limited knowledge of the cultivators.

The effects of cold, snow, humidity, dews, frosts, hail, wind, burning rust, chlorosis or yellowing of the leaves, and withering are as follows:

Cold.—This commences by destroying the tender shoots of the trees, followed by the drying up of the blossom, after which takes place the disorganization of the fruit and afterwards that of the leaves, branches, trunk, and finally roots. Crevices open in the branches, which bend and turn black, the leaves wrinkle, roll up, and die; the flowers become blackened and disorganized; the fruit loses its brilliancy, dissipates its odorous principles, loses its juice and becomes bitter, falls off the tree and rots, or if the cold has not been very intense the fruit is half frozen and remains on the tree till the following spring.

Snow.—This injures the trees, both from cold and its weight. Should the storm be heavy and the fall great, this bears down the branches and in many cases breaks some. As regards the cold occasioned by it, this does not always do harm, but when it does do so it is very frequently confined to the young shoots. Should the weather be fine both before and after a snow-storm, the cold water produced on thawing, produces its effects on the young branches, for which reason no time should be lost in shaking all the snow off them before nightfall, for should it be condensed on them, the harm occasioned would be of much greater importance. The system of placing heaps of damp straw at fixed distances between the trees, so that on setting said heaps on fire in order to obtain a smoke between the sun's rays and the trees has produced a magnificent result. If after snowing the weather continues threatening, or there be heavy clouds floating about, neither the trees nor the fruit will suffer any harm, although the thermometer might be below zero.

Humidity, dews, and frost.—An excess of humidity in the atmosphere during the fecundation of the blossom generally produces bad results, especially in such places where the ventilation is limited, should the temperature at night decline to any extent. Frost with an east wind occasions a deal of harm, but should the wind be from the north it is not so bad. Little that is economical can be availed of in large orchards, but in reduced ones the harm is lightened at small cost by availing of certain materials for shelter, of little value, which in certain districts are plentiful.

Hail.—This causes a deal of damage to the fruit. Should the storm be of short duration and the wounds occasioned by it be of slight profundity, these will soon heal up and everything continue well, but certain black stains will remain which reduce the value of the fruit. Should the storm be heavy, it completely destroys the orange, which quickly enters into a state of putrefaction.

Wind.—This exercises its influence on the orange trees in two different ways, viz, by its force and by its temperature, the injury caused being greater or less according to the position in which the orchards may lie. North, northwest, and west-northwest winds are the most danger-

ous in certain places on account of their temperature, for as a rule they dry up the extremes of the branches exposed to their influence, besides which the shoots of certain species become unsound. Those that cause most harm in the south of Europe, by reason of their impetuosity, are the south, south-southwest, and south-southeast, according to the position of the valleys. All these winds come with puffs of extraordinary strength, and destroy the branches unable to resist them. The only remedy in these important occasions is to cut off everything that has been destroyed and dried up. With the object of partially avoiding these misfortunes, the custom of producing trees of shortened growth has of late years vastly extended.

The burning and rust.—The disease know as burning is due in great part to the too abundant dews that fall here, which are evaporated with an excessive rapidity by a burning sun. To the same cause may be traced the disease vulgarly called "rust," or a class of mildew on the leaves of the orange trees. This manifests itself on the fruit by a red stain, which, as it increases, becomes much darker and finishes by disorganizing the pulp and rotting the fruit. The cleaning and pruning of the trees is the best known method against this evil.

Chlorosis.—The chlorosis or yellowing of the leaves, and also the withering, are generally attributed either to the superabundance of humidity in the soil, to an excessive quantity of branches having but little ventilation, to the want of iron in the earth, to a species of torpor in the absorption of the mineral matters existing in them, and to the alteration of the roots, if old. The remedy to be employed to combat this evil is distinct according to the cause by which itis produced.

INSECTS.

These attack the roots, trunks, blossoms, and fruit, consequently they are organical beings most pernicious to the trees, frequently causing exceeding harm on account of their extraordinary multiplication. Of this numerous class of insects, the only descriptions which up to date have proved enemies to orange trees, lemon trees, and others of the *Auranciacea* family, which are cultivated here, are the coleopteral, hemipteral, and dipteral.

Coleopteral.—This description contains more than fifty thousand species, and only one is injurious to the orange tree, the same being called *Othiorhynchus meridionalis.* This devours the leaves and tender shoots of the orange tree, and is a class of beetle or winged insect. The young insect is sufficiently perceptible, being about a centimeter long, of reddish-black color, and with grooves on the elytron. During the daytime it hides itself in the earth, where it should be hunted and destroyed, and at night it climbs the trunks, crawling up to the extreme height of the trees in search of the young leaves and tender shoots, which it devours. In general, it is not one of the most terrible enemies, on account of the facility with which it can be found out at the foot of the trees and exterminated.

Hemipteral.—Of this numerous family there are six which are enemies of the orange tree, namely, *Aphis auranti, Chermes hesperidum, Chermes oleæ, Chermes aurantii, Chermes coccineus, Coccus citri.*

Aphis auranti.—A kind of small vine-grub of green color varied by black, and with long feelers, and small green horns black at their points. It is generally seen in the orange trees in the month of September, and when the trees commence to bud it usually fixes at the extremities of the young shoots a quantity of black puceron, which occasions a vast

eal of damage to them, inasmuch as by reason of rendering them use-
ss, their growth is greatly retarded. By applying sulphur to the
hoots with great promptness the evil is soon and perfectly overcome.

Chermes hesperidum.—This gall-insect, called by gardeners the louse
f the orange tree, is not confined to the same, being also found on
ther trees, such as the laurel, myrtle, pomegranate, and others. It is
ound in the shape of an oval body nearly hemispherical, of brown
olor, somewhat lucent. It prefers the under part of the leaves, but is
equently found on top of them in a line along the center nerve or
talk, being met in greater number on the young branches, and when
umerous they occasion the loss of a large quantity of sap, which ex-
austs the trees already languid from any other cause. Fumigations of
ulphur or tobacco are not at all efficacious with these insects; the only
rue means for diminishing the quantity of kermes consists in simply clean-
ig the plants with a brush or horse-hair glove, for once that the insects are
eparated from the branches or leaves, they do not climb up again, and
hortly die. In the orchards carelessly cultivated, as also the spots
aving but little ventilation in which the orange trees are thickly
lanted and where the sun scarcely penetrates, is where this insect is
rincipally found.

Chermes oleæ.—This insect, although more natural to the olive tree, is
lso found attacking the orange tree. The small shell of the female is
emiglobose and of a grayish-brown, more or less dark in color. The
uperficies is marked with two thick transverse corrugations, which
nake it seem rough.

Chermes aurantii is big, oval, very long, and of a blackish-brown color.

Chermes coccineus.—This is called the red kermes, its body being
ound and of a bright red color. It has two long feelers, very movable,
nd six white feet. This gall-insect lives on top of the leaves, where it
eposits from ten to fifteen eggs, producing a corresponding number of
oung insects of pearly-white color, which insects on growing to the length
f half a milimeter turn red. The existence of this insect is indicated by
he appearance on the under part of the leaves of the orange trees of some
ellowish and concave spots, in which concavities they are found, and
hould they be allowed to spread much the tree greatly suffers from loss
f sap.

Coccus citri (orange cochineal insect).—This is an hemipterous homop-
erous with an oval-oblong body, convex on the top and slightly swollen
nderneath. The color is an ashy gray approaching a pale yellow,
nd it is covered with a cotton-white powder; at the sides are some ap-
endices, and the hind legs are longer than the front ones. The great
ecundity of these insects causes the damage occasioned by them to be
ery considerable, on account of the infinity of their bites, which accel-
rates the perspiration of the trees. Amongst the various methods em-
loyed for its extermination, the only one which, up to date, has given
ood results has been the employment of slaked lime squirted over the
ranches and leaves by means of a gardener's syringe or small hand pump,
aking care that all parts infected are touched. This operation is effected
hen the vegetation commences, which is when the insect takes up its
erth. The trees attacked should be immediately pruned and cleared so
s to augment the ventilation and allow the sun to penetrate in every
irection.

Diptera.—There is also a dipteran which is an enemy of the orange
rees, known by the name of *Ceratitis hispanica*, or orange fly. This
nsect in grub state lives in the pulp of the fruit, which it alters pro-
oundly, and causes the same to fall off from the tree before its maturity.

The insect is one-half of a centimeter long; of a black color in the ground, although with some yellow-whitish spots and lines; the wings are transparent and crossed by four yellow and black ribbons; the belly peduncular and round behind. The female possesses a borer with which it pierces the skin of the fruit to place an egg in the hole thus prepared. This egg produces a grub which disorganizes the pulp of the fruit and makes it fall to the ground, where it suffers its last metamorphosis. The female deposits her egg when the oranges are still small. By the time the putrid orange falls down, the grub has already arrived at its complete development, and left the same, penetrating in the earth to proceed to its transformation. This winged insect appears in the beginning of the spring. The grub does much harm to the orangeries of the South.

Ants and spiders.—Ants not only injure the fruit but impart to it a somewhat disagreeable smell and flavor; they frequently establish themselves at the foot of the trees and form galleries in all directions amongst the roots, causing such trees as are attacked to languish and ofttimes to perish from the formic acid spread around them, which acid burns the young roots. In this case it may occasion damage to the trees. When an ant-hill is found in the neighborhood of a tree, the following is recommended as an excellent remedy, viz, to take a flower pot, closing the hole in its bottom, and placing it upside down at the side of the hill. The ground is then well watered, and the ants, finding this convenient shelter, shortly shift their quarters there, taking with them their wives and grubs, so as to keep them warmer. By repeating this operation two or three times they disappear.

Spiders are carnivorous and feed on the blood of the insects they may catch, for which reason they occasion little or no damage to the orange tree.

PARASITE PLANTS.

1st. *Demathium monophyllum* or *Carbon*. This is the most common and, at the same time, most dangerous. The unseen stamens and pistils of these plants, although but slightly adherent to the vital parts of the orange tree, multiply with an inconceivable facility. Some call it *fumago citri* on account of the smoky appearance presented by the shoots attacked by the disease. Its appearance is that of a black powder, the congregated particles of which extend sidewise and form a species of very thin crust, which finishes by covering the trunk and branches. An infinity of small and fine peduncles grow out of said crust, bearing on their apex a cellule or black spongy substance, which contains the spores or seed. It is a true arthrosporic excrescence, in which the reproductive organs appear in abundance and confounded with those of the vegetation of the cryptogamia. This fabulous quantity of germs naturally causes the reproduction of the parasite to be exceedingly rapid, especially in damp and shady spots, but it must be borne in mind that it but slightly adheres to the sides of the orange tree. The aspect of an orchard infested by this parasite is sad and disconsolate; the bright and cheerful verdure of the brilliant leaves of the orange trees completely disappears; the branches and foliage acquire a blackish and dark shade, and the fruit loses its yellow or golden color, being also covered with a dark incrustation, or black smut, and falling off the trees entirely altered.

2d. *Lichen aurantii.*—This is the other cryptogamia, equally parasitic, and likewise occasions much damage to the orange tree. It presents

itself in the form of a thin substance, not thick in growth, and of a whitish gray color, covered with small protuberances, which have the appearance of organs of fructification. This plant is really more detrimental and dangerous than the other, in consequence of the tenacity with which it fastens itself on the different parts of the orange tree, but it is fortunately rarer, and the late years of dry weather have caused it to disappear from various gardens of the Mediterranean littoral, which were infested with it.

For the destruction of both parasites, slaked lime is recommended, but the better system for destroying not only these but also all other lichens, existing like parasites, which fix themselves on the trunks and branches of trees, paralyzing the functions of same and rendering them unfit to produce an ordinary crop, is to well prune the trees, so that the air, wind, light, and solar rays may thoroughly penetrate them. In such gardens, where the trees are very numerous and where the trunks are very close together—above all in such spots as the hollows of valleys or humid plains—the trees should be thinned out in such a manner that the branches of the trees cannot interlace, and that the atmospheric fluids may have free access on all sides.

Ulcers.—When a tree receives a wound penetrating to the ligneous part and leaving the same exposed to the air, atmospherical humidity, and rain-water, it alters the exterior coats of whiteness and promotes the spilling or wasting of a dark liquid of much acridity. This spilling or wasting impedes the formation of small excrescences on the edges of the wound, which are the commencement of its cicatrization, so that, instead of the wound closing up, it continues opening more, little by little, gradually changing the bark around it and the ligneous part of the tree. Such a wound may cause the death of the tree. This disease is known by the name of "Ulcer" or "Gutter." The ulcers are produced with much greater facility when the wounds present a less united superficies and are more separated from the vertical, as in such cases the rain-water is better retained in them. The most efficacious remedy to be employed in such cases is as follows: Commence by removing all the altered part until a perfectly clean wound is presented, which should be left in this state and in contact with the air for one or two days to dry it up, after which it should be completely anointed with ointment. Several ointments have been proposed as effective, viz, first, the "Ointment of San Fiacre," composed of clayey soil, cow dung, and goats' hair or wool, and afterwards a grafting mastic, which should be composed of substances not liable either to melt under the influence of the sun or crack from frost. One of the best compositions is the following:

	Per cent. of weight.
Resin	28
Burgundy pitch	28
Yellow wax	16
Tallow	14
Sifted ashes or ocher	14
	100

This mixture should be applied sufficiently warm as to be in a liquid state, but not so much so as to effect the texture of the trees, applying it with a brush. This ointment should be preferred to those which become defective through heat and are washed off by rains.

The disease of the orange tree, known by the name of *Mal de Goma*, is the most to be feared, as it causes such immense losses to cultivators. This disease consists of a gummy oozing, generally occurring either in

the spring or in the autumn. It attacks either the trunks of the trees just above the surface of the soil, or else the roots themselves. This disease commences to show itself by some drops of gum appearing on the trunk, which still appears sound, but this spilling continues increasing, the bark is perforated, and the flow of gum augments, being fluid, turbid, grayish in color, and of bad smell; the bark then raises, drying or rotting on the roots, and the plant, which commences turning yellow, weakens and dies.

Recent studies of this disease have proved that its existence is to be attributed to a microscopic fungus belonging to the group of spheroids. Where this fungus does not exist there is no disease; where the germs of it do not reach the disease cannot unfold itself; and where the conditions of life are wanting for this small vegetable, whether proceeding from nature or occasioned artificially, the fungus dies and the disease is extirpated. The fruit of this fungus forms itself about the end of July or August, being preserved during the winter for propagating its spores in the spring.

The best remedy against this disease, and which from experience has given the best result, is sulphurous acid, mixing 15 bulks of sulphurous acid, concentrated at 66° Baumé, with 100 liters of water.

Method of application.—Remove the earth round about the tree for the circumference of a meter or so, until no diseased roots are met with. The hole should then be dug deeper, but with great care, so as not to injure the sound roots near the trunk, to about the depth of half a meter if possible. The earth extracted should be piled up to burn it in a *hormiguero*. All the roots that have completely lost their bark should be cut off, as also those which are in a state of putrefaction, and these roots should be burnt. Afterwards all the sickly portions of the trunk, until the bark is saturated, are well moistened with the prepared liquid, as are likewise the diseased parts of the roots that may be met with in such condition. It is estimated that about five liters are sufficient, and other five liters for irrigating in the vicinity of the tree. The hole is then filled up either with the burned earth or with new soil, and afterwards watered lightly.

Ten liters of this water saturated with sulphurous acid are more than sufficient for a tree somewhat grown, but practice will teach the greater or less quantity that should be employed.

RICHARD LOWENSTEIN,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Grao of Valencia, June 30, 1883.

OLIVE CULTURE IN CATALONIA.

REPORT BY CONSUL SCHEUCH, OF BARCELONA.

I inclose herewith answers to the interrogatories contained in circular of December 4, 1883, in reference to the cultivation of raisins, oranges, figs, and olives in this consular district. The three first named fruits not being grown in Catalonia my answers only refer to the cultivation of the orange.

1. The olive trees mostly cultivated in Catalonia with profitable results are of the varieties called the Meños and Arbaguines, both pro

ducing a small fruit (for oil) after thirty years, and continue to bear for 150 to 200 years.

2. Once planted all trees are pruned every two years, and the soil 2 to 3 feet around the tree is dug up and worked.

3. The olives, known in the markets as Queen's ("Reinas" in Spanish), are not selected from the ordinary olive tree, but are the fruit of a special variety of tree growing in Andalusia (southern province of Spain), the fruit being larger in size than the one from the ordinary tree, and is used for the table.

4. This tree becomes in full bearing the sixth year and remains fruitful for two hundred years.

5. The average yield per acre is about 71 hectoliters, and 3 gallons of olives are required to make 1 gallon of oil.

6. The trees are planted about 10 square meters apart.

7. For pickling, olives are picked green, while for making oil, ripe.

8. This province (Catalonia) does not prepare olives for table use, but only for oil, the process being the same as a hundred years ago—merely pressing the ripe olives (stones and all), under an addition of hot water.

9. The best results obtained in Catalonia growing olives has been on hillsides in calcareous soil, without artificial irrigation (none is in use in the whole province), near the sea-shore.

FRED'K H. SCHEUCH,
Consul.

UNITED STATES CONSULATE,
Barcelona, April 2, 1884.

CORUNNA.

Consul Carricarte supplies the following:

Raisins are not made in this province, the grapes being solely employed in the manufacture of wines, the production of which does not equal the demand.

Oranges and lemons are but little grown, and are of too poor quality for exportation.

The cultivation of the olive is entirely unknown in the province, and the same can be said of figs.

ORANGE CULTURE IN WESTERN ANDALUSIA.

REPORT BY CONSUL OPPENHEIM, OF CADIZ.

In pursuance of instructions contained in Department circulars, dated Washington, December 4, 1883, I have the honor to inclose herewith a report upon orange culture in this district. I have also prepared a report on olive culture. Raisins are not prepared within my consular jurisdiction, this branch of fruit culture being localized on the Mediterranean coast of Spain, and I have therefore omitted that subject. The same will apply to dried figs, which are not produced here. Though the fruit is raised largely in Cadiz and neighboring provinces, it is generally eaten fresh, and the very small percentage which is dried turns out very mediocre in quality, and hardly enters into commerce at all.

VARIETIES, BEARING AGE, AND DURATION OF PRODUCTIVE PERIOD.

The leading varieties of oranges produced in Western Andalusia are: 1st, the Chinese orange (*Naranja china legitimas*), of which the pulp is very sweet and juicy, with thin and smooth rind; this variety is the most highly prized; 2d, the common orange (*Naranja comun*), having sweet but not very juicy pulp, the rind rugose, very thick, and easily detached; 3d, seedless oranges, of excellent quality, first cultivated by Carthusian monks at Seville; 4th, the sour orange (*Naranja agria*), having a somewhat bitterish acid flavor; 5th, the sour-sweet orange; 6th, the Mandarine orange, a very small fruit of reddish pulp and exquisite taste and flavor; the last is not extensively cultivated.

The orange tree, when raised from a cutting (which is the most usual mode), comes into bearing five years after planting, though the acme of productivity is not reached with most varieties before some ten or twelve years more. How long they remain fruitful is an undetermined question; that is to say, when the trees are in favorable environment and well cared for. There are in the garden of the Alcazar, at Seville, several orange trees yet in bearing to which very old age is attributed, one being said to have been planted at the time of King Pedro I, about 1350 to 1366; several others dating from the time of Charles I are in a better state still, and, although the trunks are hollow, the foliage is luxuriant, and they rise to a height of from 13 to 15 meters. Their trunks measure from 1.24 meters to 1.40 meters in circumference, and the age ascribed to them is about three hundred and forty years.

MANNER OF PLANTING.

The trees are occasionally raised from seed, but this mode although practiced by careful growers is not generally resorted to in this district, on account of the longer time required in bringing the orchards into bearing. The best time for putting the seed into the ground is the month of April, when the mean temperature is about 18° centigrade. With this temperature and the proper conditions of humidity the orange seeds germinate in less than a fortnight. In Seville and adjacent provinces the seed of the sour orange is preferred to all others, as it appears to develop more rapidly, the trees thus raised being later on grafted with any variety desired. Some experts (Riso) hold, however, that the plants raised from the seed of the Chinese variety, although of slow growth, are of a more robust habit and withstand cold weather more successfully. When raised from seed, the usual mode is to keep the shoots in the seed-boxes or hot-beds from four to five years, when the grafts are inserted; the plants are then kept four to five years longer in the nursery, thus taking from eight to ten years before the tree is permanently located in the orchard.

The general mode of propagation is by cuttings. Large fine twigs of last summer's growth are planted, either in November or in February. In Western Andalusia the cutting is originally chosen from the variety which it is desired to reproduce, and of course no further operation is necessary. In Valencia, however, and adjacent districts, the cuttings are chosen in reference to other points (they are often taken from the lemon tree), and then grafting or budding is resorted to, the graft or bud being of the variety it is desired to raise. The operation is usually performed during the winter of the following year, and the grafts are inserted at a height of about 10 centimeters above ground.

INJURIOUS INSECT PESTS AND FUNGOUS GROWTH.

Orange trees are exposed to the attacks of both insects and of parasitic growths. The latter are, in this section at least, considered as by far the more formidable, and will therefore claim our first attention. These parasitic growths are all low cryptogamic plants, and may be roughly divided into two classes, viz, those attacking the roots, and such as confine their action to the exposed parts of the tree.

ROOT-ATTACKING PARASITES.

Among this class the most frequent is a species of white mold, belonging to the genus *Byssus*, which surrounds the roots of the tree with its mycelium. The white filaments of which it is composed form a dense network around the roots, and have given it its popular name of *blanco de las raices* (*Anglice*, "white of the roots"). A well-known Spanish carpologist writes about this pest in the following terms:

> This parasite surrounds, exhausts, and dries up the roots of the tree, which, however, does not greatly alter in appearance during the wet season, but when the rising of the sap takes place in the spring (and in a few cases somewhat later) the affected trees quickly succumb. Indications of the evil are a certain backwardness in budding and blossoming, accompanied by pallor of the leaves and general vegetative weakness. This shows that the *Byssus* has attacked the roots. In order to counteract its effects it is necessary to completely expose the roots of the affected tree, remove the filaments of the fungus, and cover the roots with fresh soil. A hole should be dug around the tree until the roots are laid bare; the moldy surfaces should then be carefully and thoroughly scraped, and such parts as show deep injury or have begun to putrefy are to be cut off. The usual practice has been to wash or bathe the cleansed roots in water strongly charged with cow dung, but in Valencia excellent results have been obtained from the use of hydrosulphide of lime, of a solution of sulphide of copper, and also of protoxide of iron. When refilling the cavity around the tree the fresh soil should be carefully screened, in order to eliminate all fragments of dead roots or of rotten wood, as it is upon such matter that the *Byssus* develops most readily. It is further advised to place upon the roots thus cleansed and treated a small quantity of well-rotted cow manure, and above this fresh earth, mixed with salt, lixiviated ashes, and pulverized bones.

There are undoubtedly a number of the noxious fungoid growths to the attacks of which the roots are exposed, but the general features, both of the development of the parasites and of the approved mode of combating them, are, in the main, as described above. One of them, however, deserves special mention, as it proved extremely destructive in the Spanish provinces of Valencia and Castellon (in 1867–'69), and is believed to be identical with the parasite that destroyed nearly half the orange trees on the Hyères Islands in 1849–'51. This parasite is now known as the *Sphœrium Wolffensteiniani*, in honor of a distinguished mycologist who published an exhaustive monograph on the subject in 1878. At the time of the first appearance of this parasite—or orange disease, as it was then called—in the Peninsula, the Spanish Government appointed a commission to investigate the disorder. The recommendations embodied in the report of said commission were, in the main, similar to those mentioned above. The roots are to be uncovered, all the attacked parts removed and buried; copious irrigation is to be avoided, as also the use of all manure not thoroughly rotted, and especially its application close to the roots. If the soil is humid—and this seems a strongly predisposing cause—thorough draining is necessary. As efficacious remedies, are mentioned tar, soot, and protosulphate of iron, which act as antiseptics; also, powdered lime and sulphate of copper. Otto Wolffenstein, the mycologist above referred to, gives it as his opinion that the most efficient curative agent is a solution of

hydrated sulphuric acid, which, according to said writer, unites the following desiderata: First, it kills all the spores; second, it penetrates the soil to a sufficient depth without oxidizing; and third, it does no injury whatever to the roots. Ten liters of the solution is stated to be sufficient for a tree of fair size; the solution to be applied in the month of November, as this is the time when the spores are most easily stamped out.

There does not appear to be any consensus of opinion as to the greater or lesser liability of the different varieties to the attacks of these parasitic pests, nor does such consensus exist upon the comparative resistance of seedlings and the grafted or budded trees. It is, however, conclusively established that low ground, lack of proper drainage, and insufficient cultivation are the most favorable conditions for the development of the fungous parasites of this class.

PARASITIC GROWTHS UPON THE EXPOSED PARTS OF THE TREE.

The most widely spread and probably also the most damaging parasite of this class is the *Demathium monophyllum*, believed to belong to the genus *Torula* (Person), and commonly called *tizne* (*Anglice*, smut) in Spain. It looks somewhat like black dust or soot, extending in parallel lines and forming a thin crust or coating over the stems and branches. From this crust soon arise an incalculable number of minute pedicles, each one bearing its black *sporangium* filled with seed-spores. The reproduction of this parasite is incredibly rapid and vigorous, but fortunately it does not adhere strongly to the tree, hence its removal is not attended with great difficulty; the important thing is not to allow it to get too much headway. The treatment after the removal of the mold is to cover the affected parts with a solution of lime, which may best be applied with a brush. Another cryptogam, called by Du Breuil *Lichen aurantii*, attaches itself chiefly to the trunk and larger branches. It forms a thin coating, grayish or yellowish-white in color, with numerous small protuberances that appear to be the reproductive organs of the plant. This parasite is not common, but it is considered very damaging on account of the great tenacity with which it adheres to the trees. There are, however, a number of lichens which attach themselves to the trunks and limbs of the orange tree without causing any apparent injury to its growth or to its bearing power.

Great humidity of the atmosphere, want of light and of ventilation, are known to favor the development of all these cryptogamic forms, and orchards most affected by them are such as occupy low, close situations, and do not have the trees placed at sufficiently large intervals. A sufficiency of space for the free circulation of air and the free admission of sunlight is, therefore, along with proper cultivation, the best preventive.

NOXIOUS INSECTS.

A species of phylloxera, first observed on the islands of Naxos and Paros, is known to attack the roots of the orange tree, but this pest has not up to now made its appearance in the Spanish orchards. Landerer, the writer who first described this microscopic parasite, recommends the use of a solution of carbolic acid, and of a mixture of sulphur and lime, the latter to be spread around the tree.

The insects causing most damage to orange orchards are several Hemiptera, one of the Diptera, and a few Coleoptera.

Among the Hemiptera the chief varieties are the following:

Chermes hesperidum (Linn.). This insect is oval in shape, with hemispherical back, and is of a glossy brownish hue. In the spring the shell of the female contains a large number of eggs resting upon a layer of whitish downy matter. The eggs hatch rapidly, and the small larvæ are turned loose upon the twigs, leaves, and buds, feeding upon the juices of the tree. They finally attach themselves permanently (usually to the lower surface of the leaves), remaining there until the following spring, when a new generation is produced.

Chermes oleæ (Ber.). This species is found upon the orange tree, although its more usual habitat is the olive. The shell of the female is hemispherical, of a grayish brown, and has two deep transversal furrows, giving it a roughened appearance.

Chermes aurantii (Du Breuil). Has been chiefly noticed in Southern France and in Algeria. It is a large insect, in the shape of an oval, and of a brownish-black hue.

Chermes coccineus (Du Breuil) is hemispherical in shape, of a vivid red color, has two largish antennæ of great mobility, and six white legs. This insect confines itself to the leaves, upon which it lays from 10 to 15 small eggs, that produce an equal number of small larvæ of a pearly-whitish color. When they have reached a length of about half a millimeter, the insects assume the red coloring; they are frequently moving about with great rapidity in the vicinity of their meeting places, and are usually found in small swarms or colonies.

For the destruction of all the above-mentioned insect pests the liberal application of powdered sulphur is recommended, such application being probably most thoroughly effected by using bellows. In many districts, however, the method usually followed is to thoroughly scrape and cleanse the attacked branches, removing the badly-damaged parts, and thereafter applying to the affected surfaces a solution of lime (as advocated by Du Breuil) or strong vinegar (according to M. Goreau), using a brush for such applications.

Aphis auranti (Blanchère) and *Aphis citris* (Du Breuil) are by some thought to be identical. This is a very large group, and exact scientific identification is therefore difficult. The most common variety encountered here is the *pulgon del naranjo* (*Anglice*, flea of the orange tree), which is a small insect, green in color, with black stripes, having large antennæ and black extremities. They are most plentiful in September. During spring and summer they multiply rapidly, usually taking their stand upon the distal ends of tender shoots, where a certain number remain during winter in a lethargic state.

For the destruction of the *Aphis*, Du Breuil strongly urges fumigation with tobacco, for which the bellows may be used with advantage. One thorough fumigation ought generally to be sufficient, but if this is not found to be the case the process may be repeated until the insect is extirpated.

Amongst the noxious Coleoptera the most generally known is the *Othiorhynchus meridionalis* (Schoeul). This insect is about one centimeter in length, of a reddish-black hue, and has striated elytra. During the day it hides on the ground near the trees, where it is most easily pursued and destroyed; at night it climbs upon the tree and ascends to the highest parts, usually seeking for the most tender buds and leaves.

All of the above-mentioned species limit their ravages to the branches,

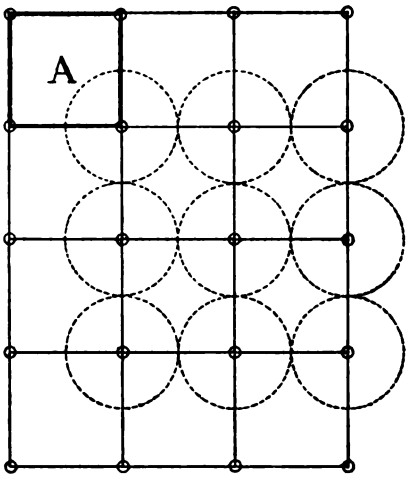
leaves, and buds. There are, however, some insects not less noxious which chiefly attack the fruit of the orange tree. The most dreaded of this class is the cochineal bug (*Coccus citri*). This insect is of a lengthened oval shape, with convex back and somewhat rounded abdomen; its color varies from an ashy grey to a pale yellow, and at certain times it is covered with a white, fluffy dust; it has peculiar prolongations or processes on the sides, and the posterior extremities are longer than the others. The male differs from the female in having two large transparent wings. The female secretes a whitish, cottony down, wherein yellowish eggs, varying in number from 150 to 400, are deposited. When the larvæ are liberated they attach themselves to the tenderest buds and shoots. There does not seem to be a fixed season for the liberation of the larvæ, further than that the hatching process is most abundant during periods of high temperature. The damage caused by this insect is noticed more especially by the great loss of fruit, amounting in some cases to half or even two-thirds of the usual harvest. In the French departments of the Var and Alpes Maritimes, as well as in Mentone, this pest has been especially severe. A French entomologist, M. de la Blanchère, has observed that this cochineal bug has itself an enemy or parasite in a species of *Syrphus*, which places its larvæ near the undeveloped bugs, upon which the larvæ feed. To this valuable auxiliary the same author attributes the disappearance of this pest from certain parts of the Mediterranean coast. De Breuil recommends sprinkling the trees attacked by the cochineal bug and larvæ with a solution of lime.

Among the Diptera the only known dangerous enemy of the orange grower is the *Ceratitis Hispanica*, commonly called *mosca del naranjo* (*Anglice*, fly of the orange tree). This fly deposits its larvæ in the pulp of the fruit, which is thereby prevented from developing, and generally drops from the tree in an immature state. The full-grown insect is about ½ centimeter in length; it is black in color, having, however, yellowish white spots and striæ; its wings are transparent and crossed transversely by four yellow and black bands; the abdomen is pedunculated and spherical at the posterior end. The female is provided with a "borer," with which it pierces the rind of the fruit, in order to deposit its ova therein; the larvæ feed upon the pulp, and cause the fruit to fall off and decay. The orange grower can only protect himself against this insect by great watchfulness in at once removing allthe attacked fruit, and thereby preventing excessive propagation of the pest.

MODE OF LAYING OUT THE ORCHARDS.

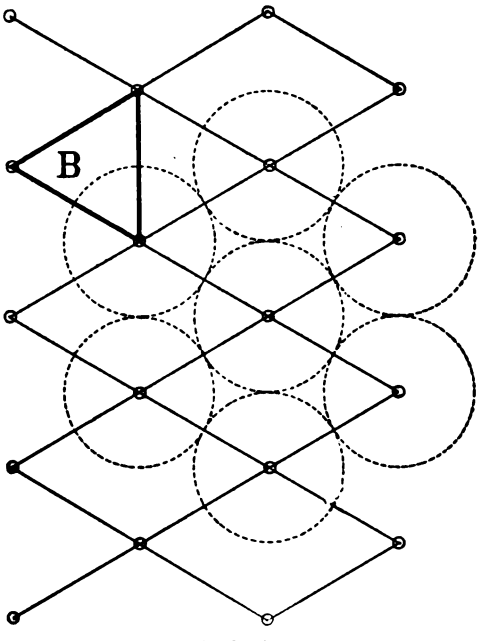
In the province of Seville, and Western Andalusia generally, the usual distance between the trees is 8 meters. In localities where the trees reach a good size it is advised to enlarge the distance to 9, and even to 10 meters. Of course, with small or dwarf varieties the intervals may be decreased. In Valentia and Castellon 6 meters is the usual distance. At intervals of 8 meters there will be 156 trees per hectare (1 hectare= 2.4711 acres), and allowing only 6 meters the number will be 276. The mode of planting usually resorted to is in parallel lines (here called "marco real"), the distance between such lines being equal to the interval between the trees, thus causing each four trees to occupy the four angles of a perfect square, A, as shown in the diagram. The objection to this mode is, that supposing the roots to extend in circles, it leaves

ween each such four circles a large space unutilized save by roots a length greater than the radius of the circle. In order to reduce



Marco real.

s loss the "diamond" plan is resorted to (*tres bolillo*), which the ond diagram illustrates. The equilateral triangle B serves as a



Tresbolillo.

sis in this plan, and it is evident that the spaces between the circles) considerably reduced, as compared with the arrangement in squares.

SITES AND SOILS BEST ADOPTED TO ORANGE CULTURE.

The orange tree, which in the interior of Andalusia is hardly found beyond latitude 37° 30′, thrives on the Mediterranean coast of Spain up to 42°. This is explained by the well-known moderating influence which the vicinity of large bodies of water has upon the climate. It is generally admitted that orange culture cannot well be carried on where the mean winter temperature is much below 9° to 10° centigrade, or where a fall below —4° centigrade is experienced. The trees are injured by lengthened periods of cold weather, especially when accompanied by frost and snow. These facts would of themselves afford the grower some guidance in the selection of a proper situation. There are some very fine prolific orchards in the rear of Tarifa, on the Straits of Gibraltar, as well as on the delta and the lower reaches of the Guadalquivir. On hillsides or uplands the trees thrive well, provided the altitude is not such as to act virtually in the sense of latitude. It is not common, I believe, to find productive orchards in this section at an altitude exceeding 250 meters above sea-level. It is also considered desirable to have the trees sheltered from very strong winds from any quarter. In Andalusia winds from the north and east are the most prejudicial, the first as being cold and raw, and the east wind as having a desiccating, withering effect. Very steep hillsides are an undesirable location on account of the insufficient retention of moisture; very low grounds are open to the contrary objection, and though large yields are frequently made in such localities, the trees are liable to suffer in wet seasons, and expensive drainage is usually imperative. Of more importance far than the merely topographical features of the soil is its composition, which will be treated further on, as also its stratification. It should be borne in mind that the orange tree extends its roots primarily in a vertical direction, thus requiring a permeable subsoil. Whenever an impervious stratum is reached whilst this vertical development of the roots is still going on, the trees suffer, and in many cases perish. Fine orchards, composed of trees of from thirty to forty years of age, have been known thus to waste away.

These few remarks are sufficient to show that categorical information as to the influence of topography upon yields is most difficult to give. Vicinity to the sea seems to be anything but injurious, though I do not recollect ever having seen orchards in immediate proximity to the sea without some natural or artificial shelter. In the valley of the Guadalquivir, both above and below Seville, very fine orange crops are raised, the altitude probably not exceeding 80 meters above sea-level. The soil of one of the best orchards of that section, on being subjected to levigation, was found to be composed as follows:

	Per cent.
Sand	43
Clay	31
Calcareous salts	15
Organic matter	11
	100

Soil of this character, or of somewhat similar type, when accompanied by permeability of the subsoil, may be looked upon as well adapted to orange culture. Soils having impervious subsoil, or such as are water-soaked or difficult to drain, are especially to be avoided; in such situations the upper layer of soil is frequently very rich, and on that account an orchard may appear to thrive luxuriantly at first, but as soon as the roots strike deeply, disaster will overtake the trees.

IRRIGATION AND CULTIVATION.

Orange groves in Western Andalusia require irrigation during the hot season at intervals varying from ten to fifteen days according to the greater or lesser porosity of the soil. The first irrigation commonly takes place after the dropping of the blossoms, though many practical growers recommend not to begin before July, alleging that irrigation before that period is generally hurtful. It seems, however, a fair presumption that the conditions of humidity prevailing during the previous spring are a factor to be considered in this respect. Irrigation is to be discontinued in October. The system most in vogue is to have circular excavations surrounding each tree, said excavations being connected by small gutters or canals, into which the water is allowed to flow. This is the most economical method, and that is its strong point in a country like this where the rainfall is light. Some of the more careful orchardists are, however, opposed to this mode, urging that the practice supplies an excess of water to the main roots (which leads to asphyxia), whilst the eccentric rootlets are insufficiently, or rather, not supplied at all. Where there is no scarcity of water it would certainly be rational to experiment upon the effects of irrigation upon the entire surface of the orchard, thus supplying the outlying rootlets with the needful humidity.

March is the month when plowing is first applied to the orchards, at which time the irrigating ditches are restored or renewed. This is also the proper time for putting on manure, which should be placed around the trees, in zones of 1 to 2 meters in radius, this being done before plowing has begun. Where the trees are planted in squares (*marco real*) cross-plowing at right angles is in order; where the "diamond" (*tres bolilla*) plan is adopted, the first furrows may be crossed and recrossed with advantage. The second plowing takes place at the end of May. A plow making a furrow of from 20 to 30 centimeters in depth is generally used. In August the soil should be hoed thoroughly; this process to be repeated in September or October. The best growers affect the use of the harrow after each plowing, as it leaves the soil in a mellower condition, breaks up the clods, and destroys the weeds.

Before the orange trees have attained their full size (usually for five or six years after placing them in the orchard) it is not uncommon to raise some leguminous or root crop on the land, taking care, however, to leave a circle of one meter in radius around each tree unoccupied.

MANURES AND FERTILIZERS.

The raising of successive orange crops year after year must necessarily end in withdrawing from the soil all available material for such culture, hence the attention of agronomists has been long devoted to devising means for ascertaining the exact nature of the constituents withdrawn, as well as the best mode of resupplying the soil with such constituents or their equivalents in an assimilable form. The following analyses, taken from a recent treatise by a well-known Spanish agronomist,* show what these constituents are and their relative quantitative proportions:

* Don Luis Maria Utor, "La Agricultura moderna."

Composition of the ashes of the fruit of the orange tree.

Constituents.	Analysis No. 1.	Analysis No. 2.
Potash	20.15	15.28
Soda	10.22	12.14
Lime	30.12	30.24
Magnesia	9.02	8.10
Phosphoric acid	20.04	18.24
Sulphuric acid	1.08	4.14
Siliceous acid	4.50	5.82
Oxide of iron	4.25	4.75
Residue unaccounted for	0.62	1.29
	100.00	100.00

Weight of the ashes of 100 kilograms of fruit: Analysis No. 1, 3.57 kilograms; analysis No. 2, 3.48 kilograms.

Composition of the ashes of the trunk, branches, and leaves of the orange tree.

Constituents.	Analysis No. 3.—Trunk and branches.	Analysis No. 4.—Leaves.
Potash	14.15	10.18
Soda	16.67	10.82
Lime	31.57	41.22
Magnesia	10.64	6.54
Phosphoric acid	18.82	19.47
Sulphuric acid	4.89	4.23
Siliceous acid	2.82	5.46
Iron and unaccounted residue	0.44	1.76
	100.00	100.00

Weight of ashes per 100 kilograms: Analysis No. 3, 6.32 kilograms; analysis No. 4, 6.20 kilograms. Nitrogen: Analysis No. 3, 1.57 per cent.; analysis No. 4, 1.60 per cent.

Leaving out of account the material required for the yearly production of leaves and buds, as to which precise data are wanting, and taking analysis No. 1 as a basis, the cropping of 16,000 kilograms of fruit from one hectare will withdraw from the soil 571 kilograms of mineral constituents, in the following proportions:

	Kilograms.
Potash	115.06
Soda	58.36
Lime	171.99
Magnesia	51.50
Phosphoric acid	114.43
Sulphuric acid	6.17
Siliceous acid	25.69
Oxide of iron (and residue)	27.80
Total	571.00

Nitrogen,* 0.85 per cent. of 16,000 kilograms.

* Gasparin, an eminent French writer on orange culture, allows 1.19 kilograms of nitrogen per 1,000 oranges. Taking the average weight per thousand at 140 kilograms, a crop of 16,000 kilograms of fruit will require 136 kilograms of nitrogen, equal to about 0.85 per cent. of the weight of crop.

The absolute and proportional percentage of the mineral constituents of stable manure is of course extremely variable. The following figures are given as the quantity of such constituents usually contained in 30,000 kilograms of what may be called stable manure of the normal type:

	Kilograms.
Potash	121
Soda	8
Lime	144
Magnesia	60
Phosphoric acid	51
Sulphuric acid	30
Siliceous acid	150
Oxide of iron	102
Hydrochloric acid	9
Total	675

The general composition of these 30,000 kilograms of stable manure may be summed up thus:

	Kilograms.
Mineral constituents	675
Nitrogen	120
Carbon, hydrogen, and oxgyen	5,205
Moisture	24,000
	30,000

Suppose 30,000 kilograms of such manure to have been applied to one hectare of ground from which a crop of 16,000 kilograms of fruit has been raised, let us see what mineral constituents have been replaced and what proportion is still wanting.

Constituents.	Contained in crop.	Supplied by manure.	Deficiency.
	Kilograms.	*Kilograms.*	*Kilograms.*
Potash	115.06	121	Excess.
Soda	58.36	8	50.36
Lime	171.99	144	27.99
Magnesia	51.50	60	Excess.
Phosphoric acid	114.43	51	63.43
Sulphuric acid	6.17	30	Excess.
Siliceous acid	25.69	150	Excess.
Oxide of iron	27.80	102	Excess.
Hydrochloric acid	.....	9	Excess.

The deficiency of lime may be left out of consideration here, as there is generally a very large amount of this constituent stored up in the soil; there remains, therefore, to be dealt with the deficiency of soda and of phosphoric acid. The first may be met by the addition of common sea salt to the extent of 300 kilograms. The 63 to 64 kilograms of phosphoric acid may be supplied by adding either 1,000 kilograms of fowl manure, 400 kilograms of guano, or 300 kilograms of ground bones.

The nitrogen withdrawn by a crop of 16,000 kilograms weighs 136 kilograms; supplied in 30,000 kilograms of manure, 120 kilograms—showing a deficiency of 16 kilograms, for the supply of which may be added either ordinary stable manure, 4,000 kilograms; *fenta desecada* (dry cow dung), 1,000 kilograms; or pigeon dung, guano, or bones, 300 kilograms.

From the above data it appears that the following mixture may advantageously be applied to each hectare thus cropped:

	Kilograms.
Manure	30,000
Ground bones	600
Sea salt	300

YIELDS, PROCEEDS, AND COST OF CULTIVATION.

The yield of the orange tree, admitting all other conditions to be equal, must necessarily vary according to age and species. In Castellon the product is stated at from 400 to 500 oranges per tree at ten years old, but full productivity is not reached before from sixteen to twenty years. In Valencia the product per hectare is given at 15,000 kilograms, equivalent to about 107,000 oranges, allowing about 140 kilograms per 1,000. Very large single trees, of course, give occasionally extraordinary yields. There are in Mairena del Alcon (province of Seville) two colossal trees known as "Los Migueletes," of which each has been known to yield up to 38,000 oranges in one year. Large and robust trees having attained their full growth frequently yield from 2,000 to 5,000 each, but in planting on a large scale, from 800 to 1,000 per tree is all that can be assumed as a fair average yield. In the district of Seville the product of an orchard of full-grown trees is reckoned at 180 cases, worth on the ground about 10 pesos ($1.93) per case. The cost of exploitation is summed up approximately as follows:

	Pesos per hectare.
Rent of ground; also interest and amortization of working capital invested	500
Irrigation (raising water, usually by animal power)	80
Manure (34,000 kilograms)	272
Hoeing, weeding, pruning, and harvesting	250
Plowing (with oxen usually)	90
Proportion of cost of keeping one horse or mule for hauling	70
Sundries and unforeseen expenses	60
Total expenses annually	1,322
Taking gross product as above at	1,800
Leaving net profit	478

From which, however, an impost of 20 per cent. must be deducted, leaving the grower, therefore, 382.40 pesos per hectare (equal to $29.87 per acre) as final net income. Calculating the total annual cost of cultivation at 1,500 pesos per hectare, this represents a return of something over 25 per cent. on the rolling capital thus employed. The total yield of the orange and lemon orchards in Spain was (in 1879) estimated at 119,437,439 kilograms, which, at the rate of 12 pesos per 100 kilograms, gives a total value of 14,332,492 pesos, and the area cultivated was given as 8,362 hectares. The rate of 12 pesos per 100 kilograms is a low one, and is, moreover, only applicable to the fruit in the orchards, before packing and transportation expenses have been incurred. There seems good reason also to believe that the quantity of the crop was underestimated, as by deducting the quantity exported in that year the remainder for home consumption would be demonstrably below even a very moderate estimate.

EXPORTS.

The following are the latest official figures showing the total exports of oranges and lemons from Spain:

ORANGES.

Years.	Quantity.	Value.
		Pesos.
Average of 5 years from, 1877-'81 ..... M..	673, 199	10, 366, 003
Calendar year 1881 ..... M..	599, 562	8, 993, 430
Calendar year 1882 ..... kilograms..	116, 667, 600	29, 166, 900

LEMONS.

Average of 5 years, from 1877-'81 ..... kilograms..	4, 971, 089	894, 796
Calendar year 1881 ..... do....	5, 392, 916	970, 725
Calendar year 1882 ..... do....	5, 415, 503	974, 791

The destination of these exports for the year 1882 is given as follows:

Countries.	Oranges.	Lemons.
	Kilograms.	*Kilograms.*
Germany	81, 760	929, 952
Algeria	17, 500	8, 550
Belgium	817, 880	69, 175
France	19, 448, 660	1, 094, 568
Holland	203, 840	248, 019
Great Britain	87, 131, 800	1, 229, 033
Italy	2, 240	16, 358
Sweden	4, 060	29, 644
United States	8, 843, 240	1, 695, 302
Porto Rico	116, 620	.....
Russia	.....	27, 525
Portugal	.....	2, 000
Denmark	.....	53, 125
Gibraltar	.....	4, 180
Morocco	.....	392
Dominion of Canada	.....	7, 680
Total	116, 667, 600	5, 415, 503

NOTE.—Up to 1881, inclusive, the orange exports were entered in thousands.

ERNEST L. OPPENHEIM,
Consul.

UNITED STATES CONSULATE,
Cadiz, February 29, 1884.

RAISINS IN DENIA.

REPORT BY CONSUL ARQUIMBAU.

The production of raisins in Denia for 1883 amounted to 2,800,000 boxes, of 28 pounds net each, valued at $4,200,000; the crop is considered to be about the same as that of last year.

These raisins are principally consumed in the United States and England; the exports to the former amount to 979,000 boxes and to the latter 1,385,000 boxes, leaving a stock in the country of 436,000 boxes.

The consumption in the United States has increased, although the price has been $1 higher for each 112 pounds during the past two years. I also observe that the fine qualities, such as those called "selected," have been in much request of late. Previously this grade was mostly consumed by the English markets.

All raisins are prepared here by scalding, and the system is as follows: They construct furnaces of feeble draft, in which wood is used as fuel. A round kettle, varying in capacity from 300 to 400 liters, re-

ceives a lye formed from the residue or refuse of the grape after pressing. The lye used is either that obtained from the present year or that which has been kept from the previous vintage. Placed in wire colanders, with long handles, containing 20 pounds each, the raisins are plunged in this lye, boiling at a temperature of about 212° Fahr. After this immersion the workmen examine the skins to note if they are sufficiently shriveled, and if not they are immersed again. Thus scalded, they are carried to the drying place, and, after a space of seven to ten days, from thence to the stores, where they are packed in boxes.

The process of immersion is a very delicate one, and requires skillful watching and great judgment on the part of the workmen who conduct it. In reality, according to the quality of the skin, its resistance, which varies with the fruit, the immersion should be more or less rapid, at the risk of having the grapes burst; besides, much skill is necessary to recognize the fissures which may appear. When the heat has been too great, the raisins too rich in sugar will mold shortly after having been packed. This process has the advantage of drying the fruit more rapidly than when only exposed to the sun, and avoiding by this chances of being damaged by rain while drying.

American ships.—None have visited this port for many years, the entire freight business between this port and the United States being done by English steamers, which, from August to December, average three a week, loading from 200 to 1,200 tons each.

Lumber for boxes.—Lumber being scarce and dear, it is largely imported into this district from Norway and Canada, for the manufacture of boxes for raisins and oranges. The last transaction I have information of was at £8 10*s.* 11*d.* for spruce, St. Petersburg, standard 3 by 9 with deal ends. It seems to me that a portion of this business could be done, if well looked after, by dealers in the United States. So far I understand the business is transacted through London dealers with the said mentioned countries.

JOHN D. ARQUIMBAU,
Consul.

UNITED STATES CONSULATE,
Denia, December 31, 1883.

FRUIT CULTURE IN MALAGA.

REPORT BY CONSUL MARSTON.

I have the honor to acknowledge receipt of Department circular under date of December 4, 1883, asking for information upon the growth and production of raisins, oranges, lemons, olives, and figs. I now make my report, dealing with subject and question in the order named.

CLIMATE.

The climate of Malaga has the reputation of being the finest in the world for persons suffering from consumption and all diseases of the throat and chest, and many invalids are ordered by their physicians to this part of Spain, their only hope of recovery, or, in some instances, to extend their lives for a few short months. In many cases they die,

away from family and friends, from the lack of many comforts easily obtained at home, but which a stranger never finds while temporarily residing in Malaga.

People in Malaga, during the winter season, wear as heavy clothing as they do in the coldest season in America, but instead of wearing this heavy clothing in the open air, they wear it in the house. Outside, the air is balmy and spring-like, but the massive stone-built houses are cold with their marble floors (even to the fifth story); and in your walks along the promenades you will find the residents walking dressed in almost spring-like costume, while in your social visits, an hour afterwards, you will find them wrapped in shawls and cloaks suffering from the damp cold which a small fire would instantly dispel. One day of such experience would affect a person suffering from consumption more than a whole winter in a colder climate where home comforts could be more easily obtained.

The hotels or boarding houses here offer no comforts to invalids; they have no fire-places; the floors, of marble or brick, are uncarpeted, and the portiéres and table-covers, if the rooms possess any at all, are faded and covered with the dust of ages. The fare of the table is generally of Spanish cookery, which, though sometimes not bad to one in health, is not such as an invalid could eat, and not nourishment in any sense to one of feeble digestion. Unquestionably the climate would arrest disease if its hand was not too firmly posed; but without the aids of comforts, which are nowhere to be found in Malaga—in hostelries I mean—it is a cruelty to the invalid to be ordered here.

There is, it seems to me, a fortune for some enterprising American who can "keep a hotel" with the American standard of comfort; but it would take time to draw the winter visitors of former years, who, for the reasons I have given above, have sought cities more hospitable, though less gifted in climate.

RAISINS.

1. The relative position of vineyards is about 80 per cent. of hillside lands and inland, about 10 per cent. of valley and plains, and about 10 per cent. of sea-coast. Vines are said to grow equally well on sea-coast or island.

2. The nearest vineyards to the sea-coast is about one-fourth of a mile.

3. Sea fogs are seldom experienced at Malaga, and are not considered as injurious to the production of grapes; on the contrary, they are beneficial.

4. Pruning scissors, with a spring, are chiefly used here for pruning vines, and are considered, in the best conducted vineyards, as superior to all others, although the old custom of using something like a chisel, about 2 inches wide, very sharp, which cuts a "clean cut," is still used by many in this province. Vineyards are pruned once a year, viz, in the months of November and December.

5. The valleys and table lands when especially cultivated produce the best grapes.

The nature of the soil on the mountains is clay slate, in the vegas, or plains, gravel, clay, and ferruginous earth.

The vineyards are generally planted in new lands, and when the soil becomes exhausted fertilizers are employed. Stable-manure and street-sweepings for table-lands have been found to be productive of fruitful vineyards. The usual distance between each vine is about 7 feet.

6. Best results are obtained in valleys, table-lands, and plains inland,

much better than on the hillside, where the rains wash away all the richness from the soil to the plains beneath.

7. Lands are cultivated in the vineyards twice a year, viz: First, in December, cutting the branches (within 1½ or 2 inches) from the root, where it protrudes from the ground, leaving only one single sprout; then they clean perfectly the knob of the vine, removing all the soil to the depth of 10 or 12 inches. Second, in April, when they cover again the root with the earth, cutting away all grass and weeds, which draw the richness from the soil. Later in the season, if there is any more grass or weeds, they are pulled by hand.

8. Vines come into full bearing at eight years old and last about thirty or forty years in fruitful condition, if the land is good.

9. There is no system of artificial irrigation in practice in this province for grape culture, but all vines receive the necessary rains naturally during the winter and spring.

10. An estimated average yield per acre per annum is about 9,000 pounds of grapes, which will yield about one-third that amount when prepared as raisins, viz, 3,000 pounds, or 120 arrobas, at an average value of 30 reals vellon per arroba in the vineyard, as they run, good and ordinary alike, which aggregates 3,600 reals vellon, or $180. From this must be deducted 20 per cent. of the total yield for all kinds of Government taxes, 10 per cent. on average production as interest on capital invested, and about 30 per cent. for cost of crop, leaving a profit to the producer of about 40 per cent. on the total yield.

The figures are given for vineyards that are fruitful and healthy, free from phylloxera and other plagues; but it would be impossible to attempt to average any particular crop, as years differ, from many unforeseen causes.

The vintage season for raisins commences about 1st of September each year, and the record of all statistics is calculated by vintages.

I have prepared a table, annexed, marked A, containing a comparative statement, at parallel dates, of the raisin crop of Malaga, for each vintage, for the five years ending August 31, 1883, including the amount exported, together with the names of the different countries to which these exportations were made.

I refer the Department of State to my report dated 27th of April, 1881, as published in Consular Reports No. 10, August, 1881,* for information upon the following subjects, which are full and complete in every respect, viz:

"The extent to which grapes are cultivated."

"The manner of their preparation for export."

General exports of box raisins, up to end of crop, compared with other vintages at parallel dates.

Whither exported.	Crop of—				
	1882.	1881.	1880.	1879.	1878.
United States	967,571	1,043,727	1,115,101	1,146,228	1,182,068
British North American colonies	38,431	31,730	46,717	30,598	58,242
Great Britain	176,349	141,415	174,126	237,659	194,471
France	277,253	251,382	297,412	368,420	330,767
North of Europe	130,646	101,828	108,222	107,888	99,661
West Indies and South America	98,007	81,196	75,456	63,688	98,429
Mediterranean and Portugal	76,842	72,746	92,735	69,330	65,107
	1,765,099	1,724,024	1,909,769	2,023,811	2,028,765
Coastwise and interior	102,901	75,976	105,231	101,189	151,235
Total boxes (22 pounds each)	1,868,000	1,800,000	2,015,000	2,125,000	2,180,000

* Will be found immediately following this report.

MALAGA RAISIN TRADE.

(In his annual report, dated November 23, 1883, Consul Marston gives the following statistics concerning the Malaga raisin trade:)

The year 1882 will be long remembered as the commencement of a new era in the raisin trade with the United States. Valencia now disputes the palm with Malaga in the magnitude of her yield and sale, for whereas the shipments from Malaga to the United States during 1882 amounted to a little over 1,000,000 boxes, of 22 pounds each, Valencia sends more than 1,500,000 boxes, containing 28 pounds each, during the last four months of 1882, as against 727,344 boxes during the same period of 1881, which is about double. There is a great difference between the Malaga and Valencia raisins; the latter are cured by the washing process, while the former are dried and prepared in the sun. The Valencia raisins are solely used for cooking purposes, and many prefer them, but they do not keep so well in transportation, nor is it safe to keep them through the summer season for fear of fermentation. Fine table fruit will always come from Malaga.

The Malaga producer has many things to learn in the way of business with America. In the opening of the vintage in September, 1882, fair prices ruled in Malaga, say 26, 28, and 30 reals vellon per box, for common layers, loose Muscatels, and London layers, respectively, but holders would not sell, always asking 2 or three reals vellon above the market rates; consequently New York buyers turned their eyes to Valencia, and orders began to go in that direction, thus reducing the shipments from Malaga. Prices here have steadily declined, and the same fruit which they could have sold in September last for 26 to 30 reals vellon per box is now being offered at 16 to 18 without purchasers. The New York market is glutted and Malaga has still about 225,000 boxes of raisins for sale. Malagueñans are now reaping the result of their foolish demands, and Valencia raisins are gradually supplying the trade which Malaga formerly controlled.

In the vintage season the merchant is kept busy filling the orders that come in the regular course of business from his correspondence in foreign countries. As soon as the rush of business is over, there are certain firms here who telegraph *firm* offers (*i. e.*, offers including C. F. and I) for goods. Especially is this done immediately preceding the arrival of a steamer sailing direct for New York. In many cases these *firm* prices are predicated upon the market prices upon the day the telegram is sent. Frequently these offers are accepted. The holder in the mean time hearing that a steamer is coming for New York, advances his prices, say 2 reals vellon per box, and while that vessel lay in this harbor the advance prices are demanded. In many instances the steamer sails, and Malaga fruit again declines to prices even lower than those indicated in the telegram, the holder defeats himself, the merchant, the steamer that expected the cargo, and everybody concerned; the correspondent in the United States is disgusted, and thus Malaga drives her trade away.

Another vintage is approaching and many holders of fruit here are negotiating with the wine merchants to purchase their raisins for the press at prices from 12 to 15 reals vellon per box, which is all they are worth for that purpose.

The crop of raisins produced in Malaga for the last three vintages are about as follows:

	Boxes.
Vintage, 1880–'81	2,015,000
Vintage, 1881–'82	1,800,000
Vintage, 1882–'83	2,000,000

The vintage of 1882–'83 to May 31, 1883:

	Boxes.
Shipped to United States about	936,000
Shipped to other countries	839,000
Stock in Malaga	225,000
Total crop	2,000,000

TRADE WITH THE UNITED STATES.

Exports from Malaga to the United States, 1882.

Articles.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.
Raisins:					
Whole boxes	151,191	99,452	232,351	513,770	996,764
Half boxes	203	493	7,934	22,099	30,729
Quarter boxes	172	400	25,161	75,442	101,175
Frails	1,300	110	455	7,650	9,515
Barrels			25		25
Lemons, boxes		411	44,977	35,418	80,806
Oranges, do		426	8	3,542	3,976
Mats, bales		417			417
Almonds:					
Boxes	330	298	6,396	6,358	13,382
Frails				360	360
Grapes:					
Barrels			2,259	510	2,769
Half barrels			7,839	1,196	9,035
Wines:					
Quarter casks	131	67	118	177	493
Barrels	51	2	51	4	108
Cases	86	1		2	89
Olive-oil, barrels		10	140	74	224
Anise-seed, packages	100	10	25		135
Palm-leaf hats, bales	445	295	560	571	1,871
Licorice:					
Root, bales	1	250	3,114		3,365
Paste, boxes	348	350	450	200	1,348
Figs, packages			600	500	1,100
Orange peel, do		41	43		84
Garlic, do		16	48	12	76
Locust beans, do				123	123
Works of art, do	4	9	4		17
Red pepper, do	30	20	49	445	554
Pomegranates, boxes				149	149
Brandy, cases				50	50
Almond shells, bags			197	920	1,117
Chickpeas, packages			10	25	35
Jackasses			19		19
Sundries, packages	2	7	241		250
Total	154,294	103,085	333,074	669,597	1,260,150

Declared value of exports from Malaga to United States, 1882.

First quarter	$354,092 42
Second quarter	229,452 55
Third quarter	630,239 00
Fourth quarter	990,771 63
	2,204,555 60

ORANGES AND LEMONS.

1. There are three varieties of orange trees, viz, China or sweet oranges, sour or bitter oranges, and acid mandarines. The best are the sweet China oranges. There are two varieties of lemon trees, viz: "Castilian" and "Royal." The latter are best; they ripen earlier and are large, and long in shape, although the "Castilian" gives a yield double over the "Royal." In all orchards there are both varieties.

Both orange and lemon trees come into full bearing at from five to six years, and generally remain fruitful from twenty to thirty years;

but when well supplied with sufficient water and manure they can be made, with care, to last from forty to fifty years.

2. The trees are seedlings from sour-orange seeds, and are transplanted at one year old, and are grafted the next year.

3. At present the trees are not troubled with injurious insects, pests, or fungus growth.

4. In orange and lemon orchards trees are planted at a distance of about 7 to 8 yards apart.

5. Orchards are inland, valley, and table, and some upland; valley and table-land yield best results.

6. The nearest orchards to the sea-coast are about 4 to 5 miles.

7. There are different systems of artificial irrigation in vogue in this province for the necessary cultivation of both orange and lemon trees. In many places the old Moorish custom prevails of drawing water from wells, dug near the orchard, by heavy cumbersome wooden buckets or clay jars attached to an endless band or belt, which encircles a large wheel, the lower part of which band or belt enters the water below, and fills with water, and is again brought up full on the opposite side till it reaches the top, where each successive vessel is emptied into a trough, and is carried over the top of the wheel, descending empty on the reverse side. I can best illustrate the manner of working it by the principle of the old endless-chain pump used in early days in the Western States. This wheel is so arranged that a shaft attached, with cog-wheels adjusted, is drawn round and round a circular track by an ox blindfolded. The water is brought from this well during the day and is carried to a reservoir close by, and is drawn off when required. In some places, near the mountains, the water is conducted from a mountain spring and carried through small canals constructed for the purpose. Again, when in the neighborhood of rivers, the water is conducted to the orchards in various ways.

The ground used as orange and lemon orchards is always cultivated for the growth of garden vegetables, or any food for cattle which is to be cut green, say, twice a year.

8. In the best orange orchards an average crop would be from 80,000 to 100,000 oranges per acre per annum, the proceeds of which would amount to, in the orchard, from $200 to $250; cost of cultivation, say, from $90 to $100.*

OLIVES.

The province of Malaga produces but few olives, Cordoba and Seville being the localities most favorable to their growth. I have, however, obtained all the information possible at Malaga upon the subject of olives, viz:

1. There are two kinds of olive trees which grow near Malaga, but not to any great extent. The "verdialis" produces the olive used for making oil, while the olives from a tree called the "manzanilla" are used for eating purposes. Olive trees begin to yield at ten years, and

Lemons.—The estimate of the lemon crop may be put down at about 220,000 quarter boxes. The exports from this province amounts to about 204,000 quarter boxes, about 80,000 going to the United States, and 124,000 being exported to other parts. The crop was a good average one, both in quantity and quality.

Oranges.—The crop of oranges was considered an average one; it is estimated at about 30,000 cases, 4,000 of which were exported to the United States; about 16,000 cases went to other parts, leaving 10,000 cases for home consumption.(—From Consul Marston's annual report for 1883.)

at the age of fifteen years they are in their prime, and live for hundreds of years.

2. The process of cultivation is plowing the ground, except in the immediate neighborhood of the tree, where the ground is loosened and broken by a hoe.

3. The "queen olive of commerce" is a splendid variety, and is produced in Cordoba and Seville, but not in the province of Malaga.

4. The older the olive tree the more it produces.

5. I can get no estimate in this province as to the average yield per acre.

6. It is estimated here that trees of 50 years old may produce from 200 to 400 pounds of olives, according to the richness of the land and the care taken in the cultivation. Every 100 pounds of olives is said to produce 25 pounds of oil.

7. The trees are usually planted about 12 yards apart.

8. Green.

9. Ripe.

10. Olives for table use are put in very salt water, and, with the addition of certain herbs and pimento, &c., remain until they are fit for eating. The olives for making oil are ground into a kind of pulp, and with the use of a press the oil is extracted.

11. Hill-sides.

12. Any soil will answer for the growth and production of olives. They require no water except that produced by rain.

13. None.

14. Olive trees do not grow to any extent near the sea-coast on account of the sea winds, which are injurious.

15. The annual rainfall in Malaga for the four years ending 1883 was as follows:

	Inches.
1880	23.50
1881	30.73
1882	16.33
1883	17.05

Average rain for four years, 21.98 inches.

OLIVE OIL.

Consul Marston, in his annual report for the year 1883, gives the following statistics concerning olive oil:

It is very difficult, if not impossible, to determine the average production of olive oil in Spain, for there are no statistics; nevertheless 40,000,000 to 45,000,000 arrobas may be considered an average crop, of which only about 5,000,000 arrobas are exported, the remainder being used in Spain. The principal cities from which oil is exported are: Malaga, Sevilla, Valencia, and Barcelona, the last two, however, only in a limited quantity.

The crop of 1882–'83 in Andalusia is considered a good one, regarding quantity as well as quality.

According to private notes, about 1,426,000 arrobas were brought into Malaga by railway from July 1, 1882, up to May 31, 1883, of which about 1,012,000 arrobas were again exported. There was on the 31st of May, 1883, some 414,000 arrobas as stock on hand in Malaga.

The largest exports were made to the following countries, viz: Germany, 386,400 arrobas; England, 276,000 arrobas; France, 156,400 arrobas; United States and South America, 55,200 arrobas.

It is not possible to give an accurate estimate of the quantity of oil entering Malaga by beasts of burden, the largest part of which is consumed in the town (the daily consumption being about 500 arrobas); thus some 138,000 arrobas may have been brought into Malaga during the eleven months preceding May 31, 1883, forming a total (with the above mentioned 1,426,000 arrobas) of 1,564,000 arrobas. Prices during the said period ruled from 30 to 35 reals vellon per arroba in store, the market having been depressed since the end of March, 1883.

At present prices vary from 36 to 39 reals vellon per an arroba, free on board, in barrels, including all charges for export.

The prospects for the coming crop, which is gathered in November, December, January, and February, is considered excellent.

FIGS.

1. The tree producing the figs for export is known here as the white fig tree.

2. This tree produces when 12 years old. The gross production per tree amounts to about 24 reales vellon, and expenses 12 to 14 reales vellon each. These trees are planted about 10 yards apart and are cultivated in the same way as the olive tree.

3. When the figs are entirely ripe they gather them and cure them by laying the figs upon straw on the ground until they are cured by the sun, covering them each night to protect them from the night dampness.

H. C. MARSTON,
Consul.

UNITED STATES CONSULATE,
Malaga, Spain, March 28, 1884.

MALAGA RAISINS.

REPORT BY CONSUL MARSTON.

[Republished from Consular Reports No. 10.]

Notwithstanding the neglectful condition of agriculture in Andalusia, and the primitive processes still followed in many ways, the marvelous fertility of the soil impresses the most inattentive and indifferent observer. But among all the natural riches that abound in this luxuriant country, the most worthy of mention are the vines, so justly famous both through the celebrated wines and the delicious raisins, of which Malaga is the principal market for all Europe and the New World.

It will, perhaps, be instructive to make some remarks on the production, preparation, and commerce of the raisins, which seems to me, although of ancient origin, to offer an attraction of novelty.

There are two distinct vines, the muscatel and the Perō-Ximenez, the first indigenous, the second imported from the borders of the Rhine two hundred or two hundred and fifty years ago by a German, whose name, corrupted in Andalusia, was given to the vine. Opinions seem divided as to the respective merits of these two vines; some insist that they are equally good, others that the muscatel are much the best. I give the decided preference to the muscatel. A box of raisins made from the muscatel, recently sent to the exposition at Moscow, by a firm of Malaga, contained samples presenting the appearance of large prunes.

The cultivation of the vine requires hard labor. The soil is dug out around the root, leaving a circular hole about one foot deep, and, owing to the firmness of the soil, the digging is very difficult. Manure of great strength is used by many proprietors.

Different from Meridional Italy, where the vine, always clinging to the elm, throws itself from the soil in forms of graceful arbor, as in the time of Horace and of Virgil, in this country it stretches itself over the ground and thus gathers all atmospheric heat. Thus, although white, the grape has a golden tint, the skin resisting and slightly tough. The branch appears like a root.

The vintage is conducted with great care; they do not gather all the fruit at one time, but mostly go over the same piece of ground thrice, in order that the grapes may have the necessary ripeness.

There are three different methods of preparing the raisins, viz, washing, drying by steam, and the simple drying in the sun. The drying by steam is more particularly followed in the province of Denia, because of the insufficiency of solar heat. It is also employed in the south in case the season is wet during the vintage.

The cut grapes are put in baskets and carried either on the backs of mules or donkeys or in carts to the places, often distant, where they are prepared, and although they transport the fruit with great care, it suffers naturally; the skin often breaks, which renders the drying difficult, if not impossible.

To dry the grapes by the washing method they construct furnaces of feeble draft, in which wood is used as fuel. A round kettle, varying in capacity from 300 to 400 liters, receives a lye formed from the residue or refuse of the grape after pressing. The lye used is either that obtained from the present year or that which has been kept from the previous vintage.

Placed in wire colanders with long handles, containing 2 or 3 kilograms each, the raisins are plunged in this lye, boiling at a temperature of about 212° Fahr. After this first immersion, the workmen examine if theskins are sufficiently shriveled; if not, they immerse the grapes a secon d time, usually the last. Thus scalded, the grapes are carried to the drying place, and from thence to the stores, where they are packed in boxes. It is not difficult to imagine that the process of immersion is very delicate and requires skillful watching, and great judgment on the part of the workman who conducts it. In reality, according to the quality of the skin, its resistance, which varies with the fruit, the immersion should be more or less rapid, at the risk of having the grapes burst; besides, much skill is necessary to recognize the fissures which may appear. In cases where the heat has been too great, the raisins too rich in sugar will mold shortly after being packed. This process offers, among others, the inconvenience of exposing the raisins to fermentation during transportation, necessitates expense for the construction of furnaces, and the necessary last drying in the sun; besides, no matter what grapes employed, or what care bestowed in the preparation, the results will always be relatively inferior.

The method of preparing raisins by steam is as follows: After having been exposed nearly twenty-four hours to the sun's rays, the grapes are carried on boards under cover to a building arranged with shelves 6 or 7 feet high. A heat is produced by steam that circulates in an iron tube 7 or 8 inches in diameter through the entire building. It is unnecessary to submit the grapes to a jet of steam, which would injure them by making them damp, but to a veritable heat of 160° Fahr. Valves, arranged on the floor, cause an even temperature. At the end of twenty-four hours,

usually, the drying is finished, but as the immediate transfer from a temperature of 160° Fahr. to the open air would injure the ultimate result, it is necessary to let raisins cool gradually in a room constructed for the purpose adjoining the heated room, and only when the raisins are entirely cool are they carried to the stores for packing.

This is the process most generally employed in the region of Malaga, a process they are trying to extend to other less favored climates. The sun furnishes all the heat required; it is enough to construct divisions, of either brick or stone, exposed to its rays, in an inclined position, say 10 yards long and 2 yards wide; the divisions or apartments are built up at one end with a sort of triangular masonry, which from afar gives them the aspect of a range of uniform tombs. The triangle is so constructed that the sun never fails to shine upon the contents, the interior being covered with fine gravel, which attracts the heat. Immediately after gathering, the grapes are placed in three divisions, and are exposed to the heat of the burning Andalusian sun of August. Never, it appears, have they dreamed of ascertaining the heat thus obtained, but the experienced cultivators affirm that, during the heat in August, they attain a temperature of 145° Fahr. At nightfall a very simple method of covering is applied to guard the fruit from the heavy dews or rain, either of sail-cloth or heavy canvas so arranged that it covers entirely the grapes that are drying within, and, being supplied with rings on two sides, slides up and down as a curtain at a moment's notice. In many places boards or planks are used, giving the appearance of a roof. During the process of drying they carefully remove the grapes that remain green or spoiled, and they turn each grape in order that they may darken in color uniformly. Competent judges give the preference to this simple method of drying, as much for the results as for the simplicity of the process. The raisins that have been prepared by the scalding process dry in four days, while those dried by the sun take ten days, but this loss of time is largely compensated by the economy of expenditure. The raisins are not ready for packing immediately after being dried, but have to be kept several days in the stores on the planks on which they are carried.

The raisins that are spoiled or defective are picked out, especially any that are broken or bruised, out of which one drop of moisture would be likely to damage a whole box. This has to be done with exceeding great care. Finally they are classified, which is a task exceedingly difficult, as cultivators and merchants differ greatly in their opinions. The merchants nearly always remodel the boxes packed by the producers. In the demands of foreign countries for Malaga raisins each has its particular and special requirements for what may be considered first-class fruit.

For France, raisins may be classified as follows:

Sur-couches, *ordinaire*, sur couches, choix, sur-choix, royaux, impériaux. The first, which is the most ordinary, is never shipped, except under a fictitious name; the other brands bear the true name of the merchant, but rarely the name of the producer.

For England the raisins may be classified as follows:

1st. Finest Dehesa, 3 crowns.
2d. Finest Dehesa, 2 crowns.
3d. Fine Dehesa, 1 crown.
4th. Dehesa.
5th. Choice layers.
London layers (from good to poor).

For the American market the following brands are shipped:

1st. Imperial finest Dehesa layers.

2d. Royal finest Dehesa layers.
3d. Finest Dehesa layers.
4th. Fine Dehesa layers.
5th. Dehesa layers.
6th. London (ordinary) layers.
London, loose, 1, 2, and 3 crowns, the last being in three qualities.

The boxes are mostly made by contract at 75 centimes of a peseta (about 15 cents) each. I think the best boxes are made of fir imported from Portugal. The producer almost always provides the boxes and packs them, but they are always repacked in the towns by the merchants, who usually employ women or girls for this labor. All raisins are packed in boxes, except those shipped in barrels and frails, and are divided into four layers in each whole box, which, if of full size, contains 22 pounds of fruit, the total weight with the box usually being 28 or 29 pounds. The first or top layer is always the finest and largest, being selected with great care. The merchant is obliged to be familiar with the tastes and demands of the country for which the raisins are intended.

Although the United States are the principal buyers, they do not purchase the finest quality, almost all the best going to England and France.

For England the layers are not presented in bunches, but are all separated from the stem and pressed very tightly down by the lid of the box, which has the effect of making them, in show, a very large raisin.

For France the bunches must be entire; this difference proves that in England the buyers observe the appearance of the fruit, whilst in France they examine very critically, more desirous to assure themselves of the quality rather than appearance. In this regard, and contrary to their usual habit, the English show themselves less practical than the French.

The average cost in Malaga of 100 boxes loose muscated raisins, the staple shipped to the United States for the year 1880, was about—

Raisins (100 boxes)	$126 10
Boxes (100 boxes)	14 55
From holder's warehouse to ship, including examining, marking, cartage, lightering, and nailing (100 boxes)	5 00
	145 65

In the choicest raisins sent from Malaga, there can be expended in decorations of inside papers from 5 cents to $1 per box, at the option of the purchaser.

Before closing my report upon raisins, I would allude to a practice which has caused much dissatisfaction between American purchasers and Malaga merchants in the fruit trade, *i. e.*, in the shipping of light-weight boxes of raisins. It has been customary to make the boxes of exceedingly thick wood, which weighed more than the amount allowed for tare. Thus the New York purchasers paid for one or two pounds more of raisins in each box than they received, and great trouble was experienced in consequence. Lately, however, there has been a concerted agreement upon this point, in which the New York buyers have united, and they have issued a circular laying down the rule that all intend to follow hereafter, which is, that all boxes of raisins that do not contain 22 pounds net will not be received, but will be considered unmarketable, and will be sold at public auction for account of shipper.

Under this new rule, fear is expressed by some that, wood being scarce and dear in Spain, and not being able to continue to profit out of the thickness of the box, boxes will be made so thin that they will lack the strength to bear the necessary handling in transportation.

The crop of raisins produced in the Malaga district from the vintage of 1880 and 1881 is estimated at between 2,000,000 and 2,050,000 boxes, not much varying from the previous vintage.

The stock of raisins in the province of Malaga to-day is estimated at about 150,000 boxes, while one year ago it was estimated at only about 50,000 boxes. At the commencement of the present vintage prices ruled about 40 per cent. higher than during the same time the year previous, and since the 1st of January last but few shipments have been made to the United States as compared with the same period in 1880.

H. C. MARSTON,
Consul.

UNITED STATES CONSULATE,
Malaga, April 27, 1881.

PORTUGAL.

FRUIT CULTURE IN THE AZORES.

REPORT BY CONSUL DABNEY, OF FAYAL.

RAISINS.

It may be said that none are produced in the Azores, the local consumption being almost entirely supplied by importations from Portugal.

ORANGES AND LEMONS.

The lemon, never raised in large quantities in these islands, probably because its quality did not make it a favorite, has become quite extinct as an article of trade in consequence of the liability to disease of the tree roots. The orange of the Azores, the China orange, is a fine fruit, but of so perishable a nature as to be incapable of resisting a long voyage. In Fayal and Terceira it has ceased to be exported, not being able to compete in price with oranges sent from other countries in the markets of England, the only markets really within the reach of so delicate a fruit. At the island of St. Michael, which has always been immensely in advance of the others in point of quantity produced and exported, the trade, for the same reason, although yet an important one, has diminished very seriously. From the United States consular agent at that island I have obtained the most of the following information regarding the orange culture. The varieties preferred are the "Selecta" and the "Navel" orange, the Latin names of which he could not obtain. The trees come into full bearing at the age of eight or ten years, and continue to bear until forty or upwards—in by-gone times to a much greater age. They are obtained from seedlings, on which, at the proper age, the best varieties are grafted, and also by the system of layering; the former are naturally longer-lived trees.

The orange tree at St. Michael appears to be subject to a drying up of the branches without any apparent cause, and without the presence of any insect or fungus. No remedy has yet been discovered for this, I am told (may it not be from exhaustion of the soil, probably?). It is customary to set out orange trees about twenty-five feet apart. The

best orange gardens are some two miles from the coast line. The spaces between the trees are sometimes filled with corn or vegetables, but the more sagacious cultivators abstain from this. Where the garden is devoted exclusively to oranges it is hoed twice a year, but as a rule not manured; never irrigated. The cost of cultivation is estimated at $20 per acre.

An acre yields about 40 boxes of a size to contain some four hundred oranges; the value at the present time problematical, as the exportation is done by the garden proprietors banded into large companies. Formerly, when more or less of the fruit was bought by speculators on the trees—all expenses being for this account—it was sold at from $1.50 to $2 the "English box," a package equivalent to three Sicily boxes, or containing from six to nine hundred oranges, according to size of fruit. In a good year as many as two hundred and fifty or three hundred thousand of such boxes were exported from St. Michael, conveyed by small fast-sailing schooners, carrying from six to twelve hundred boxes of that size. Of late years the carrying has been done by steamers.

The Azorean orange has been with few exceptions packed in corn husks, it being found that, liable as it is to decay, the husk, being thicker and firmer than paper, protects the sound ones more effectively from a decayed comrade.

The soil of these islands, though generally thin, is fairly productive if rain does not fail too much during the summer months, and it is observed that the best oranges are raised on rather a sandy soil; those from richer ground being thicker skinned and deficient in flavor. The climate is decidedly a damp one, but equable in temperature. The mean annual temperature, deduced from three daily observations of a Fahrenheit thermometer properly placed in the shade, I found to be 62°, the maximum observed being 80° and the minimum 44°.

OLIVES.

There is no culture of these in any of the Azores.

FIGS.

A considerable quantity of figs is produced, but they are consumed in a fresh state, with the exception of a small proportion converted into an ordinary brandy for home consumption. Scarcely any are dried, the climate being unfavorable to the operation.

S. W. DABNEY,
Consul.

UNITED STATES CONSULATE,
Fayal, April 24, 1884.

P. S.—Since writing the foregoing I have been informed that although at St. Michael the "Selected" and "Navel" orange are favorites they are seldom exported, for the reason that they ripen later in the season, and that the common China orange (*Citrus aurantium*, Risso) is the variety used in commerce.

FRANCE.

FRUIT CULTURE IN SOUTHERN FRANCE.

REPORT BY VICE-CONSUL MARTIN, OF MARSEILLES.

The climate of that part of France which is washed by the Mediterranean can be placed among the most pleasant in the world. Extreme heat and cold are alike unknown, and while under the influence of regular sea-breezes the thermometer rarely shows a temperature of more than 80° or 86° Fahr. in summer, the winters are remarkably mild, and snow and ice are in fact a rarity in the country. On the other hand, drought is exceptionally severe, and, in the warm season, months are sometimes passed without a drop of rain to moisten the parched ground. The water streams are mere torrents, which cannot supply any water for irrigating purposes in the dry season, and, when swollen in the fall by frequent floods of rain, rush impetuously to the sea, carrying away large quantities of the light vegetable earth, in the place of which they leave rocks and pebbles brought down from the steep barren hills with which the country is covered.

The soil is generally light and stony; calcareous or argillaceous, sometimes granitic or schistic. Frequent and strong winds from the northwest sweep across the country, and, being cold and dry, are extremely injurious to agriculture.

For all these reasons the modes of cultivation and the produce of the soil are widely different from what they are in the other parts of France. The culture of grain, so largely predominant elsewhere, is here confined to a few plains and valleys that are favored with means of natural or artificial irrigation, and is entirely inadequate to the demands of local consumption. Arbustive culture, on the other hand, is extensive, and furnishes the country with most of its revenue. The olive tree, which is not cultivated beyond a comparatively short distance from the Mediterranean shores, and the vine, which is more extensively grown in these than in any other parts of France, stand foremost in that branch of agriculture.

THE VINE CULTURE.—VARIETIES MOSTLY CULTIVATED IN SOUTHERN FRANCE.

In a general way, vines in this country can be planted in any sort of ground, without regard to altitude, declivity, or distance from the sea. Still it is a well-established fact that better results are obtained in valleys and plains as to quantity and on hillsides as to quality. In other words, wine being the chief object of vine culture in this country, the produce of hillside vineyards will be less abundant, but obtains higher prices for its superior flavor, richness, and strength.

As for the nature of the soil, every different ground appears to be better adapted to the different varieties, numbering three hundred or more. A complete enumeration of these varieties would be tedious and of little interest, and I shall confine myself to a brief description of the varieties mostly to be found in Southern France.

(1.) The "Mourvedre" or "Mourvedu" thrives best on calcareous soil, with a thin layer of vegetable earth, and a substratum consisting of crackled rocks. Each plant can then give as much as five pints of a wine

that is substantial, of a rich color, with a slight tannic flavor, containing about 11 per cent. of alcohol. The grapes are sweet, black-blue, round, rather small, and more or less thick on the bunch. In this country they come to maturity in the first days of September, and do not rot as easily as other varieties. The "Mourvedre" bears fruit on its third year, comes into full bearing on the sixth, and is fruitful after that as long as it lives, viz, from forty to one hundred years.

(2.) The "Grenache" has a preference for hillsides and dry and gravelly soil; it thrives on all kinds of ground, provided they be free from dampness; it is more sensitive to cold than the Mourvedre, and can be killed by a temperature of 17° Fahr. There are two varieties of Grenache, the black and the white. The white produces good fruit for the table, and a kind of white wine that is much esteemed.

(3.) The "Peconi tonar" is remarkable for its durability and abundance of produce. It gives the best returns on rocky hillsides and meager soil, but does not bear fruit until the fifth or sixth year. As the wine produced is light in strength and color, the grape, of a black purple hue, is generally mixed with the fruit of other varieties in the preparation of wine.

(4.) The "Aramon" or "Ugni noir" only thrives in loamy soil, and must be extensively cultivated. It produces large quantities of a wine that is light, poor in alcohol, does not keep long, and suffers much from transportation.

(5.) The "Brun fourca" is mostly cultivated on hillsides or in dry, gravelly, or stony land. The grape, which is large, elongated, of a bluish-black color, is not fit for the table, and must be mixed, for the making of wine, with other grapes richer in sugar and tannin. The production, which begins in the third year, increases as the plant advances in age. On favorable soil it reaches the quantity of three quarts of wine for each plant.

(6.) The "Carignau" or "Monistel" must be planted on high, substantial ground, free from dampness. It begins to bear fruit on the second year, and produces a spirituous wine that keeps well, improves with time, and stands transportation remarkably well, but is somewhat rough to the taste. The vine is apt to suffer from oidium.

(7.) The "Picardan" is one of the most productive varieties cultivated in this country. The best results are obtained in rich, pebbly, consistent, high land. Dampness is rather beneficial to the plant. The grapes are large, elongated, fleshy, sweet, and very palatable. The wine produced is of a fine red color, mellow. It possesses a pleasant flavor with a smack of the fruit, and keeps well.

(8.) Owing to the general preference given by the consumer of this country to red wine, the white varieties are but little cultivated, and the grapes are generally consumed fresh. Still the number of these varieties is large, and I shall only mention those that are most common in the country. The "Ugni blanc" is one of the few white varieties that are grown in view of wine-making, owing to the small size of the grapes. In low and rich land the quantity produced is larger and amounts to an average of two quarts for every vine. On high, stony, or gravelly ground, on hillsides, the quality is much superior, and the wine produced commands much higher prices than that of the plains. The plant thrives better near the sea-coast, where it is less affected by cold. The other varieties, "Clairette," "Colomband," "Mayorguin" or "Marseilles plant," and "Muscat," are generally cultivated on hillsides, and their produce is sent to the market for table use. The Muscat grape is only turned into wine in one district of the department of Hérault, that of Lunel and Frontignan.

PLANTATION AND CULTURE.

In this warm and dry climate it is necessary to break up the earth to ıe depth of two or three feet; the time when this preparatory work is erformed varies according to the nature of the soil. It can be done on igh and dry ground before the rainy season sets in, and even in sum- er; for low and damp soil, it is preferable to wait until the heavy fall ains are over, and delay the operation until March or April.

When the ground has been previously planted with vines, it is a gen- al custom to allow it to rest for a number of years, varying from one two for strong, consistent, fertile or clayey soil, and for a longer me in sandy, light, permeable land. Lucerne or other leguminous lants are raised in the interval, but the culture of wheat should be voided, as it deprives the earth of much of the gluten which is neces- ary to the grape from which wine is to be made. When the ground has een properly prepared the vines are planted in the form of cuttings or oung plants raised in nurseries. The latter grow faster, but vines that ave grown from cuttings appear to do better in the long run, espe- ally when they have been taken from vines twenty or twenty-five years d. Slips can be kept for some time before being planted, but must ıen be allowed to soak in water for some days.

The time and depth at which to make the plantations are also regu- ted by the nature of the ground. In dry and high land, winter is ıe most favorable season; in low and moist ground the middle of pring is preferable. The depth generally adopted is that of 2½ et in dry and light soil, 20 inches in medium land, and 13 inches in ch, damp earth. In this country, where vines are grown in bushes ıd without the support of poles, no other care is taken of the vine- ard for the first year beyond that of keeping it clear of weeds by lling and hoeing. After the first year the first pruning takes place. nly one branch is left on the stem, generally that which is nearer to the round. It is well established that a short stem helps maturity to a reat extent, but as on the other hand the plant is made by it more able to rot and frost, the above rule is only followed on hillsides or dry nd; in valleys and low, damp land, the branch which is left on the lant is selected at a distance of 12 to 14 inches from the ground. In l cases that branch is itself pruned short and left with two or three es only. Every year after the first a new branch is left on the stem, ıt the total number is rarely over four or five. The guiding rule for runing is that branches shooting from the stem are unproductive and ıould be cut close to the stem. The fruitful sprigs issue from one- ear-old branches. Each eye of these sprigs generally produces two ınches of grape and one shoot. The quantity of eyes that should be lowed to remain on the vine depends largely upon the nature of the ıil and the strength of the plant; the number on a full-grown vine aries from 12 to 24. There is no generally adopted time for pruning, very vine-grower using in this respect his own judgment. It ordi- arily takes place between the months of January and March, and is llowed immediately afterwards by a first plowing, which after a few ays is completed by a second hoeing; the same operation is repeated April and May; and, in the best-conducted vineyards, a third time June. The culture should always be applied with great care, and ever exceed the depth of from 10 to 12 inches, for fear of hurting the ots.

There are but very few districts in this region where an abundant ıpply of water can be obtained, and the vineyards are in consequence

rarely irrigated. When practicable, water is brought into trenches that run along the rows of vines, but never in excess, as it is well ascertained that moisture, while improving the yield as to quantity, is detrimental in a large measure to quality, and makes the vine much more sensitive to frosts and cold weather.

Fertilizers.—In new soils the vine can easily dispense with fertilizers of any kind for thirty years or more; it is even claimed by some good cultivators that an addition of virgin earth or calcareous marl prove to be the best fertilizers. Still the custom is prevalent to use stable dung at the rate of twelve tons per acre, applied once in from four to six years. A ton per acre of horns, woolen rags, or oil cakes, which are abundantly imported or produced at Marseilles, is frequently used as a substitute. Horns and rags remain effective for five years, oil cake for two only. Whatever may be the manure employed, it is customarily buried in furrows cut between the rows of vines. These rows are generally from 3½ to 5 feet apart, and the same distance is kept between each plant in the row. But in some parts of the country a larger space frequently exists between the rows; the intervals thus intervening are then devoted to some other culture, wheat in most cases. But it has been found out that the system proves injurious to both cultures, and it has been abandoned to a great extent.

YIELD, VALUE, AND COST OF CROP.

Grapes are never dried in this country, except by such farmers as do not have a sufficient number of vines to enable them to undertake the making of wine, or are too far away from a consuming center where they could send to the market the small quantity of fresh grapes produced on their farm. The method followed by such farmers is very simple: The grapes are dipped in boiling water and exposed to the rays of the sun for eight or ten days. The raisin thus prepared cannot compete with that imported here in large quantities from Spain, and the amount produced is consequently insignificant.

Railroad facilities have made it possible to dispose of a certain quantity of fresh grapes at paying prices, but still the great object is the production of wine. In consequence, all the calculations made regarding the yield, value, and cost of crop depend upon this production, which is regulated by so many circumstances that it cannot easily be established on a fixed basis.

While the cost is submitted to little variation, between the sums of three and four hundred francs per hectare ($24 to $40 per acre), including the purchase of manure, sulphur (as a preventive against oidium), and the making of wine, the yield is entirely subject to the weather throughout the year, as is the value to the quotations of the wine market. It is generally conceded that one acre of vines can produce from two to four hundred gallons of wine, and that the cost of cultivation takes up one-third of the proceeds.

DISEASES OF THE VINE.

Many causes can affect the yield and value of the crop. Amongst those of frequent occurrence are atmospheric influences, early spring frosts, that blight the plant and leave no other remedy than the cutting of the stem on a level with the ground, to let new sprouts grow from the roots, or the uprooting of the whole plant, which is either re-

placed by a new one or, more rarely, by means of "provining," that is, forcing into the ground one of the long branches of the next vine.

Extreme drought prevents the growth of the grapes in size and quantity, but improves the quality of the wine wonderfully, according to the common saying, "A year of drought is a year of good wine." A wet season, on the contrary, brings abundance of wine, but impairs the quality, so that in many instances the wine is unsalable and must be turned into alcohol.

The vine also suffers from many parasitic insects or diseases. Few of these ever produce disastrous effects except oidium, phylloxera, and, more lately, mildew.

Oidium, which at a time endangered the future of the French vineyards, has been and is still successfully counteracted by the use of flowers of sulphur. They are mixed with an equal quantity of plaster, or a smaller proportion of lime, and carefully sprinkled on the young leaves once or twice before the ripening of the grapes. The wine-growers of this country, who could procure flowers of sulphur at low rates from the important refineries of Marseilles, were in the end benefited by the appearance of the disease, as it opened for the abundant but inferior wines produced in this region a more extensive market, and brought about a decided advance in the prices, which had been as low as 6 francs per hectoliter (8 cents per gallon). When the rates of 20 and 30 francs per hectoliter could be obtained, the production of wine increased in a remarkable measure. In 1874 the seven departments of Bouches du Rhône, Gard, Aude, Hérault (the production of which alone amounted to 13,000,000 hectoliters), Pyrenées Orientales, Var, and Vaucluse, forming this consular district, contributed more than two-thirds of the total production in France.

It was just then that phylloxera made its appearance and raged in this district, where it worked its more pernicious effects. Many vineyards were entirely destroyed, all were attacked, and an idea of the extent of the damage can be formed from the following table, giving the area planted in vines in thousands of acres and the production of wine in thousands of gallons, in each of the seven departments, for the three periods 1856–'60, 1866–'70, 1876–'80:

Department.	1856–'60.		1866–'70.		1876–'80.	
	Surface cultivated, 1,000 acres.	Production 1,000 gallons.	Surface cultivated, 1,000 acres.	Production, 1,000 gallons.	Surface cultivated, 1,000 acres.	Production, 1,000 gallons.
Aude	175	17,013	200	44,486	279	85,565
Pyrnées Orientales	111	7,555	131	16,062	161	34,844
Hérault	390	108,228	524	362,636	363	143,576
Gard	198	30,379	222	50,192	54	5,468
Vaucluse	71	6,393	74	10,435	30	1,479
Bouches du Rhône	108	11,042	114	10,540	67	2,747
Var	200	20,341	185	23,564	161	12,733

In this connection the following table of importation and exportation at the port of Marseilles may be a more striking evidence of the vicissitudes undergone by the production of ordinary wine in Southern France:

	1862.	1867.	1872.	1877.	1882.
Importation ..... gallons..	185,206	263,563	1,605,202	1,808,355	18,175,188
Exportation ..... gallons..	267,544	6,045,848	7,806,196	5,719,651	4,902,398

The emotion created by the ravages of phylloxera was immense' and the French Government instituted a prize of 300,000 francs to be awarded by a special committee sitting at Paris every year to examine into the progress of the disease and that made in counteracting its effect. In its last sitting, which took place this year, the committee decided that submersion, sulphide of carbon, and sulpho-carbonate of potassium should again be recommended for the year 1884, and admitted that it would be well to use American vines as "graft bearers," particularly the Riparia, Solon, York, Madeira, and Jacquez. It finally decided that the prize of 300,000 francs should once more be reserved, as none of the remedies so far invented were of a sufficiently effective character to justify its being granted.

As I have already remarked, there are but very few places in this region which can dispose of a sufficient supply of water to make the submersion system available.

The appliance of sulphide of carbon is costly, and although it has proved an efficient preventive, it does not appear to possess marked curative efficiency. In consequence the planting of American vines has met in this part of the country with general favor, and it is expected that in a few years hence all the vineyards that have been destroyed will be renovated by means of American plants.

Most satisfactory results have been obtained wherever the experiment was made. M. Reynaud, our consular agent at Toulon, informs me that he planted several acres of his property with Riparia and Jacquez vines on which he grafted the French varieties previously grown on the same soil. After three years, he reaped 3,360 liters per hectare (a result somewhat superior to the average) of a wine that was in all respects the same as was formerly produced by the original French plants. His plantation does not suffer in the least from phylloxera, but requires more cultivating and fertilizing than the French vines.

Mildew.—It was not until last year that mildew caused noticeable damage in the vineyards of France. No means have yet been found out to counteract the disease. In fact very little is known so far about it and the conditions under which it propagates. It has been noticed that vines planted near the sea-shore were more liable to it, and the prevalent opinion is that mildew is caused by a persistence of moderate moisture in the atmosphere, which is of very rare occurrence in this climate, except in the month of September. As the crops have already come to maturity by that time, and the disease seems to attack the leaves only, no great anxiety is felt here concerning it.

The making of wine is, in the southern region of France, carried on in the most simple method. A dry sunny day is selected, when practicable, for the picking of the grapes, which must be ended before sunset. All the grapes are placed, just as picked from the vine, in immense wooden or masonry vats of from four to six thousand liters' capacity, and trampled under the feet of a number of men sufficient to permit of the operation being completed in one day. The "must" is left to ferment in the vats some eight days, and then decanted into barrels, which are not bunged until fermentation has stopped, that is, forty or fifty days.

As the producer generally sells his wine at once to the merchant, he does not submit it to any of the many manipulations that take place in the traders' cellars.

The only practice in force is to sprinkle the top layer of the grapes in the vats with a small quantity of plaster, which, it is claimed, gives to

the wine a better color and a slight degree of astringency necessary to its preservation.

The olive tree is only cultivated in France in the departments bordering upon the Mediterranean. From the remotest antiquity it has been a source of great riches to this part of the country, as it thrives on land where no other culture could be attempted, and is productive for centuries.

The varieties are almost numberless, as the tree takes a different name in almost every district where it is cultivated, and are distinguishable by the fruit only, as the appearance of the tree is nearly the same for all the varieties. The best-known varieties cultivated in view of the fruit are the "Espanenque," "Prunaou," "Triparde," "Picholine," "Bouteillan," "Verdale," &c. Those that produce the best oil are the "Aglandaon" of Aix, the "Soloumen" of Salon, the "Amclon" in the departments of Hérault and Bouches du Rhône, the "Brun" and "Cayon" in that of Var, and "Aubanenque," "Saurin," "Rougette," &c.

The nature of the ground appears to have but little influence with the yield of the olive tree; still a stony soil, with a rocky substratum, a mixture of clay and sand, or calcareous and gravelly earth with a little humus, appears to be more favorable than marly, granite, or schistic soil.

As to the situation, hillsides or table-lands sheltered from high winds, with an easterly or southerly exposure, give the best results. The proximity to the sea must be rather beneficial than otherwise, as many orchards are planted on the very shore, and those that are at the greatest distance from it are as a rule the most sensitive to cold weather. In fact, there are none to be found far off from the coast.

The process of cultivation is of the most simple description. As a matter of fact, many orchards that are not cultivated produce the most esteemed oil, although in smaller quantities. In many others one hoeing in the year is deemed sufficient. In a few, where the trees are planted in quincunx at a distance (which is generally adopted) of 10 meters or 33 feet from each other, the alleys formed between them are tilled with the plow, great care being taken not to hurt either the roots below or the branches above. There is in this way left around each tree a square space, which is then hoed by hand. The same operation is repeated in the course of spring, and again in summer.

Pruning is generally considered as unnecessary, and must be conducted with great care, as the tree is liable to suffer by injudicious or excessive lopping. It is only applied once in three or four years, and confined to the suckers and the withered or entangled branches.

Fertilizers should also be applied with a great deal of precaution. The best manure is that consisting of a mixture of animal and vegetable matter. It is placed once in four years a little beneath the surface of the ground. Close contact with the roots should be avoided. Many cultivators prefer to dig out the earth from around the foot of the tree and fill up the hole with fresh mold.

An excess of manure has the same effect on the tree as an excess of water. It rots the roots, and in all cases produces an abundance of aqueous sap. As the olive tree vegetates all the year round, this abundance of sap makes it more liable to the effects of frosts and cold. It also rends frequently the bark of the boughs, and flows out through these fissures with considerable detriment to the tree.

On the other hand, irrigation, while impairing the quality of the oil, produces much larger quantities of fruit that is also larger in size, and

in many districts where fruit forms the object of culture the orchards are frequently watered by hand, with watering pots, or, when the water supply is at hand, irrigated after the manner that meadows are.

PLANTING.

The olive tree can stand any degree of drought, but a temperature of from 10° to 14° above 0 Fahr., accompanied with snow, kills the boughs and trunk. There is then no remedy left but to cut the tree on a level with the ground, and allow the roots to grow new shoots, or to root it entirely and replace it by new plants. The olive tree is remarkably reproductive, and any part of a twig would, in course of time, take root and give birth to a tree. A shoot from the old roots about 2 inches in diameter is generally selected for reproduction; it is taken off from the roots with care, so as not to hurt either the scion or the roots, and planted in a square hole, 6 feet on each side of the surface, and 3 feet deep. The hole is usually filled with other earth than that which has been taken out of it. The young tree, when planted, should not be more than 4 feet above the level of the ground, and frequently bears fruit after five or six years. Trees grown from the kernel of the fruit do not begin to be fruitful until the age of fifteen or eighteen. For this reason, this mode of reproduction is only practiced in nurseries, where young trees are also raised from wild scions and slips, and sold at the rate of 1 franc or 1.25 francs. These are in many cases preferred to the trees grown from old roots, and when properly packed can be transported to long distances.

The yield, proceeds, and cost of cultivation must necessarily vary widely according to the manner in which orchards are cultivated. The cost may amount to any sum between $5 and $20 per acre.

As to the yield, it is even more variable; each tree may pay from 50 centimes to 3 francs. As a rule, an olive tree is only productive every other year; some varieties, when placed under the most favorable conditions of soil and weather, produce two years in three, but in no case is the yield constant. It varies from 60 to 535 gallons of fruit per acre. The average price of the fruit ranges from 12 to 22 francs per hectoliter (9 to 17 cents per gallon). The quantity of fruit turned into oil is not the same in all districts, some of which prepare a much larger quantity for table use than others. On an average little over two-thirds of the whole crop is sent to the mill.

PREPARATION OF OLIVES.

Olives intended for table use must be perfectly sound, and of course are picked among the largest on the tree. There are two modes of preserving olives, in pickle and in oil. Those that are to be preserved in oil are picked when perfectly ripe, that is, black. They are, without any further preparation, steeped and kept in olive oil with some fennel, coriander, salt, and pepper. The pickled olives are picked before they arrive at maturity, and as soon as they have acquired a bright green color. They are pricked and rolled into wood ashes to set free all the oil they may already contain. After being washed they are placed in the pickle, where they remain until consumed. The "Picholine" and "Verdale" are the varieties mostly prepared in pickle here. The "queen olives" are the produce of a variety of tree that is not grown in this country. They are imported at this port from Spain.

Nearly all the production of preserved olives is consumed in France. The exportation is exceedingly small, and does not amount to more

than a few thousand kilograms, that are mostly sent to Algeria. The extraction of oil is made in special mills where the farmers bring their crops by quantities of 400 liters (about 106 gallons). For this quantity, called "molte" in the country, the mill owner generally returns 40 liters or 10 per cent. of oil. The olives are thrown into a recipient where they are crushed under the action of two wheels measuring two and a half feet in diameter and worked by water or steam power. After two hours the olives are reduced to a sort of a paste which is placed in a number of grass bags and pressed. The oil thus expressed is called "virgin oil," the quantity being about one-half of the whole produce. The paste is then taken out of the bags, spread out on a cloth, broken up, and replaced in the bags. Each bag is drenched with about five gallons of boiled water and placed again in the press. The mixture of oil and water thus obtained is left for a day in the receivers. The oil comes to the surface, is skimmed off, and in most cases mixed with the virgin oil first extracted. The mill owner charges 3 francs for each "molte" and keeps the residues, from which he again extracts, on his own account, by a supplementary and more abundant addition of boiling water, an inferior grade of oil called "ressence." There is still left in the residue after this operation a small quantity of oil that is extracted, in special factories, by means of sulphide of carbon.

The diseases of the olive tree are few in number and seldom fatal to the tree. The most common are: The "mofée" or "noir," which covers the bark and leaves with a sort of black matter that is sometimes friable, sometimes compact. The origin and causes of the disease are not well known. It is counteracted by a sprinkling of lime and water and by a pruning, more extensive than usually, so as to let the black deposit be freely swept off by the wind. The "mouffe" is produced by an excess of wetness, that decays the sap. When the vegetation is stayed and the leaves turn yellow, the roots and branches attacked must be cut off, as also those parts of the stem where the rotten sap, known by its stench and black color, has found its way, and draining trenches should be established without delay.

Olive trees planted near the sea-shore are sometimes covered with a coat of green moss, that is not in itself injurious to the tree. Large numbers of microscopic insects live in that moss, but do not seem to hurt the tree; so that nothing is done to remove them.

Cochineals are, among the parasitic insects that live on the sap of the olive tree, the most common and most dangerous; they are driven away by rubbing the boughs and branches with a piece of cloth soaked in vinegar or whiting.

No remedy has yet been found to protect the olive orchards against their worst enemy, an insect called the *Dacus olea*. It is a species of fly that deposits its eggs in the fruit. The larvæ feed on the pulp of the olive before it comes to maturity; when they make their exit they frequently cut the peduncle of the fruit, which falls to the ground. When the olive remains on the tree the produce in oil is considerably impaired, both in quality and quantity. The damage made by the "ver" (worm), as the *Dacus olea* is commonly called, has been particularly great in the last two or three years.

The fig tree is common in Southern France, and specimens of the several varieties known in the country are to be found in almost every ground lot, but it is not the object of special culture. The preparation of figs requires too much time and care, and the price could not repay hired labor. The figs must be culled one by one, when perfectly ripe; great care must be taken not to bruise the fruit or sever the peduncle.

The figs are then laid on cane hurdles, exposed to the sun, and turned over every now and then until perfectly dry, that is, for a period of ten or fifteen days. As the least exposure to moisture would turn the figs black and reduce the value by one half, these hurdles have to be taken in every evening, to be again taken out every morning. The difficulties of the operation deter most farmers from undertaking it, except those that own small farms where everything must be turned to account, and that cultivate them themselves with no other help than that of their family. The small quantities thus prepared are gathered at the end of the season by commercial travelers, who pay from 1.50 to 2 francs per kilogram for "Marseillaises" figs (which are the most esteemed variety), and generally mix them with figs imported from Italy, Spain, Algeria, and the East. It is in consequence impossible to form any idea of the importance of the production, or of the proceeds. In 1882 the importation of figs from the above-named countries amounted to 9,964,743 kilograms, whereas the exportation was not even given separately, for it was included in the official returns with that of other dried fruit not elsewhere specified, amounting in all to 397,269 kilograms.

The climate of this consular district does not agree with orange and lemon trees, which are not seen in the open field except at a short distance from Nice.

J. S. MARTIN, JR.,
Vice and Deputy Consul.

UNITED STATES CONSULATE,
Marseilles, March 11, 1884.

GRAPE CULTURE IN THE CHAMPAGNE DISTRICT.

REPORT BY CONSUL FRISBIE, OF RHEIMS.

I have the honor to acknowledge the receipt of Department's circular dated December 4, 1883, with interrogatories regarding grape culture, methods of cultivation, &c., in the best conducted vineyards, and the method in practice for raisin culture; which interrogatories have been prepared and submitted at the request of some of the leading fruit-growers of California. I realize that the subject is one of considerable importance, and shall be glad if I can furnish anything of interest and profit to the great industry centered in the cultivation of the vine in the United States. In the first place, however, I am estopped from giving any information regarding raisin culture from the fact that no grapes are grown in this consular district for that purpose, the climate and soil not being suitable.

The vineyards here are cultivated and the grapes grown for the exclusive purpose of manufacturing champagne sparkling wine, the best growths always being used for that purpose, the manufacture of table and dessert wines for commercial purposes having entirely ceased in the champagne district.

Recognizing the importance of the cultivation of the vine and the manufacture of its product to a large class of cultivators in the United States, soon after my arrival at this consulate I began an earnest study of the subject, and in the spring of 1882 I communicated to the Department, in three separate reports, the results of my investigations, which were soon after published in the monthly consular reports. In those reports I wrote all there was to be written on the subject, in so far as I

could inform myself at the time, and I have really learned but little new or interesting touching the matter since. However, as a greatly increased interest seems to have sprung up among all classes of our people within a short time past in regard to the importance and value of consular reports, and as very many are now interested readers who never read them before, and as the reports now called for are for the special benefit of a class of interested cultivators, I have thought it well for me to go back to the minutes of my study of the subject two years ago and give our California friends and other vine-growers a recast of what I then learned about the cultivation of the vine in the champagne district and the manufacture of its product, together with such new facts as I shall be able to give, believing that it will now come under the notice of many new and appreciative readers.

As far as the champagne country is concerned there can be no doubt that the vine has been cultivated since the most remote times, the dry and chalky soil of the surrounding hills and valleys being specially adapted to the cultivation of the vine. The cultivation of the vine in the province of Champagne, in the department of the Marne, and particularly in the districts of Rheims and Epernay, is, according to the most reliable authorities, of very ancient date. One writer says: "Strong men, we know, lived before Agamemnon, and strong wine was made in the fair province of Champagne long before the days of the sagacious old monk, Don Perignon, to whom the world is indebted for the sparkling vintage known under the now familiar name of champagne." Cato the elder informs us that in his day vine plants were brought into Italy from Gaul; and Cicero, in his speech on behalf of Fonteius, refers to the great trade in wine carried on by the Gauls, of which at that time Rheims was the capital.

Domitian ordered all the vines in Champagne to be uprooted and destroyed. He had an idea that the culture of the vine caused people to neglect that of cereals and general agriculture, and he also feared that the desire of drinking wine would attract the barbarians to the country. It was not until about two centuries later (280 A. D.) that they were replaced by the Emperor Probus.

There are several groups of low hills situated on the banks of the Marne and the Vesle, possessing a light, shallow soil, and with a pervious understratum principally composed of Tertiary layers and of chalk, with a mixture of silica and light clay, combined with a varying proportion of oxide of iron. These groups of hills are finely situated for sunshine, and of very little good for the cultivation of other vegetable produce. Such advantages as these seem to point to a special provision of nature for the cultivation of the vine. Poor, sometimes even barren soils, so long as they are easily accessible to air and water, are, as every one here will tell you, quite sufficient for its growth.

If the first attempts at cultivation were crowned with success, still it was not till a comparatively recent date, which we may fix at the last quarter of the preceding century, that this industry sprang into importance. It was, indeed, from this time that champagne wines, already renowned for their fineness and lightness, began to be the object of new experiments. These resulted in a gradual increase and improvement in vine-growing and to the perfecting of the produce.

Sixteen thousand five hundred hectares (about 40,700 acres) are at the present time devoted, in the department of the Marne, to the cultivation of the vine. In each district the nature and situation of the soil, and more especially the experience of vine-growers, partly founded on tradi

tion, have lead to the adoption of different kinds of vines and various modes of culture.

Unquestionably the finest grapes are produced in the hilly regions in the neighborhood of Rheims and Vertus. The wines coming from the slopes of these hills have long been celebrated; the first under the name of *river wines*, and the second under the name of *hill wines;* but this distinction has nearly ceased since the appropriation of wines of a certain quality for the manufacture of sparkling champagne.

The most renowned vineyards extend—

1. Along the right bank of the Marne from Mareuil to Damery. Along the line of railway from Paris to Rheims, the traveler sees on his left in succession the fertile hills of Damery, Cumières, Hautvillers, Dizy-la-Rivière, and Ay. Further on, as the line curves, those of Mareul, Bouzy, Ambonnay, and Trépail come into view.

2. On the slope which faces the Vesle and the city of Rheims are the not less prosperous ones of Villy, Mailly, Tillery, Verzenay, and Verzy.

3. On the left bank of the Marne, four or five miles from the railroad and the river, lie the celebrated vineyards of Epernay, Pierry, Cuis, Cramant, Le Mesnil, and Avize.

Not far from these vineyards, from which are made the celebrated champagne sparkling wines, are others of less pretensions, which produce red table wines of some value. In the districts of Châlons, Vitry, and Ste.-Menehould, only wines of less value are produced, which are seldom used in the manufacture of champagne.

In these different localities the principal kinds of wines grown are: White grapes, *épinette*, or the white *morillon*, and the large *vert-doré* of Ay; red grapes, the *pineaux*, and among them the small vert-doré, distinguished by its compressed, irregular bunches of middling-sized grapes, by its large leaves, somewhat rough on the upper and smooth on the under side, lobed, and but little indented. The *épinette* is a prolific bearer, and its round, transparent berries, which hang in no very compact clusters, are both juicy and sweet. It ripens much earlier than either the other varieties. The *vert-doré* is robust and productive, but yielding a less generous wine than the *pineau*, the plant *doré* of Ay, and the berries of which are dark and oval, and very thin-skinned, and remarkably sweet and juicy.

One variety is the plant *gris*, or *burot*, a somewhat delicate vine, whose fruit has a brownish tinge, and yields a light and perfumed wine.

There are several other species of vine of second rank, cultivated in the champagne vineyards, notably the common *meunier*, or *miller*, bearing black grapes, and which derives its name from the circumstance of the young leaves appearing to have been sprinkled with flour. There are also the black and white *gonais*, the *meslier*, a prolific white variety, yielding a wine of fair quality; the black and white *gamais;* the *tourlon;* the marmot, and several others.

These second-rate vines produce in abundance the wines which were formerly reserved by the vine-growers for their own consumption, but which are now used by not over-nice speculators to mix with their superior wines. It is but fair to say, however, that these second-rate vines are rapidly disappearing, and vines of the first class taking their place.

On the hills around Rheims and Vertus the method of low cultivation prevails, whilst tall vines are almost exclusively grown on the hills of Chateau Thierry. These widely different methods are said to be required by reason of the different nature of the soils. Along the course of the Marne the vine grows on a shallow, dry soil, receiving and reflecting nearly the whole of the sun's rays. The mode of culture em-

ployed allows of the assimilation of the vines to a sort of trellis-work, the trunks of which are in the ground, while the bearing branches growing up from them extend along the face of the soil just the same as if they were trained on a wall, only in this case the face of the soil representing the wall. On the hills of St. Thierry, on the contrary, the situation is less favorable, the soil being richer, deeper, and more humid; hence the need of a higher growth and a special mode of cultivation. The vines are almost invariably planted on rising ground, the lower slopes, which usually escape the spring frosts, producing the best wines.

In the champagne country the vine, whether cultivated on the high or low method, becomes productive as the result of the most minute, incessant care and attention. In the localities where it is almost the only industry it involves during the whole year a series of operations which employ the greater part of the population. According to the statistics the hands employed are about equal in number to the hectares of land in cultivation, and an average of one vine-dresser for every 2¾ acres of cultivated land.

The various operations required in cultivating the vine are performed by the owners or vinegrowers, properly so-called, or by laborers employed by them, who are to be hired at wages which vary according to the urgency of the work.

The heads of the great champagne houses are as a rule proprietors, in one or more localities, of extensive vineyards. They possess also a large wine-making establishment, and retain a regular troop of vine-dressers, whom they lodge and employ by the year.

Pruning, tilling, propagating by layers, bedding, hoeing, propping, pruning and nipping the buds, and making storehouses are the principal operations of these workmen from January to September, when the harvest is made. At this season they conduct the vintage; then, when the wine is made, and the vine props pulled up, they profit by the fine weather at the end of autumn, and in the winter, by manuring, digging ditches, charring or sulphating the poles, &c.

For the champagne vine-dresser the year begins directly after St. Vincent's day; that is, at the end of January or the first half of February. At this date, if the weather be fine, operations are begun by pruning. At Ay and Dizy all the large vines are pruned on two stems; but middle-sized and small ones on a single stem, preserving one "eye" more. At Avize, Cramant, and Verzenay they are trained on a single stem, but a much longer one. It is also towards the end of February that the twigs that have been cut off are gathered into bundles, either to be burnt or to be sorted out and kept for slips. In March the first work is done on the vine, when the first digging is done. If it were done earlier, there would be the inconvenience of the soil being too hard; and if later, the danger of losing the young shoots, so tender and so slenderly attached, by want of attention mainly on the part of hired workpeople. In this month, too, the vine is usually rebedded, which is done by surrounding the plant with earth as high as the new shoots of the year; but in some places this is done by leaving a cutting of the year before out of the ground. This work is done with a hoe, the workman digging a small hole under the stem, which he then lowers by pressing on it with his foot, and then fills up again with fresh soil.

In April these operations are continued. It is also in this month, if the weather be favorable, that the making of layers is begun. In order to do this a ditch is dug, or perhaps was dug the season before, 20 centimeters (about 10 inches) deeper than the roots of the parent stem, and a layer of well mellowed earth taken from the surface soil is placed

there; then a horizontal layer of cuttings, prepared for the purpose, is inserted on the parent stem and is covered with fresh soil taken from the bottom of the trench. This method of propagating the vine (the bedded plant being destined to separation from the parent stem) has the advantage of rapidly producing new sources of production, and is in general use in the champagne district. It is also during April that the propping of the vines is commenced, the vines being supported by stakes, usually of oak, and as a close system of plantation is followed, no less than 24,000 stakes are required on every acre of land. These stakes are set up by men and women, and an expert laborer, it is said, will set as many as 5,000 of them in the course of a day.

In May, if the season is early, it is convenient to give the first nipping to those branches which grow too rapidly. About the 25th, when there is no longer any fear of frost, the ground is plowed (or delved) again. This light work, which is needed to get rid of pernicious weeds and vegetation, is performed with a hoe or weeding hook. This is best done in dry weather, and should not be done after rain or heavy morning dew.

Toward the end of May, and especially about the beginning of June, commences the training of the vines. All the branches of the same stock are tied by the same band to the supports (stakes). It is the custom to cut off the shoots which do not reach the ligature at a leaf above the last grape, and to cut off short those which do not show any sign of fruit. After the vines have been secured to the stakes and have been carefully hoed around their roots the tops are broken off at a shoot to prevent them from growing above the regulation height, which is usually from 30 to 33 inches.

The cultivators regard the numerous stakes which support the vines as affording some protection against the dreaded white frosts of spring, but I think there can be placed but little, if any, reliance in such a source of protection. These frosts invariably occur between early dawn and sunrise, and, to guard against them, some cultivators place heaps of hay, refuse, dead leaves, and branches, &c., about 6 or 7 rods apart, taking care to keep them moderately damp to prevent too rapid combustion. When a frost is feared the heaps on the side of the vineyard from whence the wind blows are set on fire, and the dense smoke spreads over the vines, and is said to produce the same results as an actual cloud, warming the atmosphere and converting the frost into dew. In case there is no wind blowing, all the surrounding heaps are set on fire and the desired effects obtained. There are other methods of protection against frosts employed, such as roofing the vines over with a straw matting, about one foot and a half in width, and in rolls of considerable length, &c., but the system of creating a dense, warm smoke, as stated, appears to be most in favor.

Besides the plowing, which a good cultivator is never afraid of repeating too often at this season, it is useful toward the end of June to give the ground a second delving. This second digging over (it is generally finished by the first week of July), it is well to prune the lower "eyes" which have sprouted since the first operation of the kind, it always being considered desirable and important to prevent, so far as possible, the growth of superfluous woody matter, which tends to draw nourishment from the growing fruit and injure its development. This is a matter which I believe should more earnestly engage the attention of vine-growers in the United States with profit to themselves and satisfaction of their customers in being able to procure well-developed and consequently luscious fruit.

From the 20th of July to the 15th of August the heat is too great o permit of work in the vines, which in fact are now in no need of par- icular attention, except it be a little digging if the weather be rainy. The vine-grower makes use of this time to make use of his *magazines*; his is the name given in the champagne country to th heaps of fertil- zing matters which he collects at the side turnings from the roads or ther places as near as possible to the vines, and which fertilizing mat- ers are composed chiefly of a kind of compost formed of the loose riable soil dug out from the sides of the high hills, and of supposed olcanic origin, mixed with animal and vegetable refuse. This is also he time to look after the young plants of the year.

Toward the end of August it is the rule to submit the vines to a evere pruning, so as better to expose the grape to the air and the light, lways taking care not to bruise it.

At the vintage season, which is generally the middle of September, undreds of families of the surrounding districts and departments, the isne, Ardennes, and Somme, throng into the vineyards, and receive s compensation for their labor from 40 to 60 cents a day.

The harvest is made with the utmost precaution. The grape-gather- rs are advised to support the fruit with the left hand, so as to prevent he riper grapes from falling; not to bruise it by throwing it into the asket. These small baskets are afterwards emptied into larger ones, r hampers, in which the fruit is taken to the owners of the vineyard, here their contents are minutely examined by men and women, who luck off all the bruised, rotten, and unripe berries and throw them nto a separate basket, as such fruit is a decided if not fatal injury to first-class wine. If the grapes are very ripe, wisps of straw are laced in the bottoms of the hampers to prevent jolting and bruising.

The picking ordinarily commences with daylight, and the vintagers ssert that the grapes gathered at sunrise always produce the lightest nd most limpid wine, and that by plucking the grapes when the early orning sun is upon them they are believed to yield much more juice. ater on in the day, too, spite of all precaution, it is impossible to pre- ent some of the detached grapes from partially fermenting, which fre- uently suffices to give a slight excess of color to the must, a thing to e especially avoided, no matter how rich and ripe the fruit may be, in high-class sparkling wine. I desire, in passing, to call the special ttention of those attempting to make sparkling wines in the United tates to the important fact that the use of unsound or unripe fruit, ven in a small quantity, is fatal to success.

When the harvest is over, usually about the end of October, the takes are taken up and arranged in vertical piles or horizontal heaps. hen, until the bad weather, the roads or paths of the vineyard are re- aired; old vines are pulled up; the earth is leveled, the materials rom the magazines (manure, &c.) are turned out; the trenches for ropagating the vines are constructed; and when on approach of the rost the vines cannot be approached, the time is spent in making stakes, props), the earth ends of which are first charred and then soaked in a olution of sulphate of copper.

Such are the principal operations which custom and experience have anctioned in the true champagne vineyards; that is, in the hilly regions f Rheims and Vertus.

In the vines called St. Thierry, or high vines, the succession of oper- tions is much the same, and the work differs but little from that al- eady described. This method of cultivation, however, necessitates ree or four plowings; further, at the early spring pruning all the

fruit-bearing branches of the preceding year are lopped off; then suppose one had to choose between four branches left by the preceding time of growth, it would in general be best to cut off two and preserve those which were nearest the parent stem, one being pruned with two "eyes" and provides the woody matter, and as for the other, destined to become the fruit-bearing branch, it should be of medium thickness, with well projecting knots, and with a tendency to grow horizontally. At a later season the first is fixed vertically to tall stocks 6 feet high, and the second is bent round, fixed, and becomes the bend.

Both low and high vines undergo at proper times, differing according to locality, manuring, and improving operations of various kinds. Whether the vine should be manured, and if so under what conditions and at what times, is a disputed question amongst the greater number of writers. Thus, Dr. Guyot recommends manuring every three years, and enough manure to be put in each time to last those three years, viz, 3 pounds per vine in the best soils, 6 pounds per vine in medium soils, and 12 pounds per vine in poor soils. On the other hand, M. Violart, of Ay, another eminent authority, recommends the moderate use of manure for oldish vines, and protests against the mischievous use of manures for young vines.

> The fruit which is grown from it is only nourished by the manure that has been put into the soil; it hardly takes any of the nature of the soil. An abnormal vigor is given to the vine, and it is in a way plethorized for several years, and when the juices of the manure are exhausted it begins to grow weak; it is ill, as the vine-dressers say. It is therefore necessary to manure young vines with much moderation, but the older ones will bear more.

One of the most important questions, important both by reason of its presence and its dangerous character, is without doubt that of the diseases of the vine.

Although the phylloxera has not yet made its appearance in the champagne country, still there is no lack of other scourges to the cultivation of the vine. Every year has its records of substantial disasters, more or less local in character. Here, as everywhere else, despite the attention and shrewdness of vine-growers, and notwithstanding the invention of many means of protection, there are some vines, generally those with the lowest situation, which pay a heavy duty to the frosts and mists of spring. Often, also, some districts are robbed of their produce by hail.

Apart from these cosmic disturbances, in some districts where the earth, more likely rich than poor, rests on an impervious understratum, generally of a strong character, there appears, after a luxurious vegetation of several years, the disease which the vine-dressers call *chabot*—the withering and death of the plants, which is due simply to the rotting of their roots, caused by an excess of humidity collected in an unretentive substratum.

But it is especially vegetable and animal parasites that have for a longer or shorter time back threatened the harvests. Of late years an infinitesimal mushroom, the *Oidium tuckeri* (vine mildew), has appeared very frequently, not only on trellised vines, but even in the vineyards. Flowers of sulphur is an undoubted antidote; but notwithstanding its efficacy it has not yet been generally adopted by vine-growers. Frequently, too, the leaves of the vine suffer from the incursion of another fungus or asexual plant, *Erineum necator*, but the damage done by it is of small importance.

Animal destroyers belong chiefly to the insect order. Every year the different districts suffer from the devastations of several kinds of

Coleoptera. In the early spring the shoots suffer from the incisions of the *Culs-crottés* or *Coupe-bourgeons* (*Oliorhynchus ligustici*, *O. raucus*). Later on the *Gribouri* (a vine-grub) or *Ecrivain*, scribe (*Bromiris vitis*), comes out and bites the leaves and buds, and lays its eggs on the stem of the vine. Lastly, in June and July, appears the *Bêche*, grafter, and *Lisette*, vine-fretter (*Rhynchites betuleti*), which rob the plants of their leaves.

Among the *Lepidoptera* there are two which are especially obnoxious: The vintage-worm (*Cochylis omphaciella*) breeds twice a year, and destroys the fruit both in spring and in autumn. The summer worm (*Olnophthira pilleriana*) has taken up its abode (as is testified by many old records) for a long time past in two localities especially. It commits its depredations at various intervals of time, but always for several years at a time. Its scene of operations is the locality of the best vines half-way up the hill between Ay and Dizy. Its second rendezvous is at Verzenay, in the best vineyards, also situated about half-way up the slope.

Every year the champagne vines, more or less the victims of these accidents, yield, as a rule, a rather poor crop; in fact, in spite of the careful attention and care of the vine-grower, an acre rarely yields more than 3 or 4 measures (6 or 8 hogsheads), of 2 hectoliters, *i. e.*, about 6 or 8 measures to the hectare of prepared wine. To this calculation of yield we must add about two-thirds as much again for secondary wines, known under the names of first "taille" (pruning), second "taille," and "rebêche" (second tilling). With the exception of the first "taille," which is sometimes used in the preparation of sparkling wines, these wines are consumed by the proprietor and his vine-dressers.

At Ay, which may properly be chosen as the center and type of the true production of champagne, unbottled wine is worth in an average year from 600 to 800 francs a measure of 2 hectoliters, and the price is about the same for the not less famous vintages of Cramant and Verzenay. One year with another, then, the vine-growers receive a sum of about 1,800 francs ($360) per acre, that is, by reckoning the minimum price of 600 francs and the production at three "pieces" per acre; but they have been obliged to spend from 1,000 to 1,200 francs during the year on the vines and in the production of the wine. This result would be certainly most satisfactory if this average figure of production was reached every year, which unfortunately cannot be said to be the fact.

The comparatively limited extent of the champagne vines (for although there are in the department of the Marne 16,500 hectares—40,700 acres—of vineyards, the real centers of champagne making only occupy from 600 to 800 hectares) is the principal cause of the high prices which the first crop, good or bad, fetches every year.

JOHN L. FRISBIE,
Consul.

UNITED STATES CONSULATE,
Rheims, France, January 31, 1884.

CULTIVATION OF THE VINE IN THE GIRONDE.

REPORT BY CONSUL ROOSEVELT, OF BORDEAUX.*

SOILS.

The land more or less devoted to viticulture in the department of Gironde may be divided into six categories: (1) Alluvial or palus land, (2) rich, strong soil, (3) marly calcareous land, (4) gravelous land, (5) siliceous, and (6) sablo-argillaceous land.

The alluvial or palus lands lying in the bottom of the valleys are the result of the successive deposits of rivers. This category includes the drained marshes and substratum of the valleys.

The soil of drained marshes is mixed with mold, fine sand, and organical particles of vegetable and animal matter; the subsoil is composed of clay, sand, turf, and sometimes marl. The nature of palus soil is simply that of the marsh where the alluvial ground has been drained and improved by culture. The best palus land is in the district of Lesparre, in the cantons of Blanquefort, Carbon-blanc, Blaye, and Saint-Ciers-Lalande, and borders the side of the Garonne, the Dordogne, and the Isle. The wines of those vineyards possess color and vinosity, but lack delicacy of taste.

The highlands are those where the argils predominate; they exact, according to their nature, the assistance of manure, transports of light earth, and constant plowing. These lands are generally to be found on the hills and hillsides; they have, in general, a calcareous or stony subsoil; this kind of soil is particularly appropriate to the vine.

The marly calcareous land covers a considerable part of the country; it agrees with the vine when sand, argil, or gravel forms an important proportion of the ground.

Gravelous land is the most favorable for vine culture as regards the quality of the production, and may be divided into two classes: (1) On gravelous land composed of stones or quartz, being about three feet in depth, and having a subsoil of clay and argil or alios, the best growths of Médoc and Graves are cultivated; (2) sandy, gravelous land, forming a composition of sand and stones, based on an inert sand or upon aliotic layers, is not propitious to the vine in consequence of the humidity of the subsoil.

The siliceous land covers nearly half of the department. It partakes of the siliceous nature, mixed with clayish, calcareous elements, which, when properly worked, is well suited to the culture of the vine.

The batardes, or terres batards, present an intermediate state between the rich land and the siliceous sandy lands; their fertility is more or less great according to their situation; the ordinary white plants grow in these soils with facility.

SUBSOILS.

The study of subsoils is also of importance to those desiring to cultivate vineyards. They have a considerable influence upon the success of the vine and upon the nature and quality of its production. I shall

* Consul Roosevelt acknowledges his indebtedness for the greater part of the information contained in this report to M. Edoner Feret, of Bordeaux, a recognized authority and author on vine culture.

livide them in six classes: Argillous, sablo-argillous, calcareous, marly, gravelous or stony, sandy aliotic.

Argillous subsoil, when it is composed of close or compact argil, is nurtful to the vine, because it is moist, and in consequence the roots are easily attacked by cold, and giving to the fruit a very definable earthy taste.

The sandy argillous subsoils are favorable to the vine, providing the sand enters for about one-half into its composition, permitting the water to pass through suffiiciently to exercise a salutary influence on the roots, that is to say, refreshing them without leaving behind an unhealthy humidity; but then the vine on these soils is ordinarily more cultivated with a regard to quantity rather than quality of its productions; meanwhile the soil is fertile, and admits of the finest vines being cultivated here.

The calcareous or marly subsoils are often compact and not sufficiently porous, by reason of which a free flowage of water is checked, and when near the surface of the soil they are extremely hurtful to the vine; they may, notwithstanding, be of great use by digging the ground and mixing it with the upper layers of earth. If these layers are sandy or sandy gravelous, a very favorable result may be obtained; but if composed of greasy sand, the mixture will not be so good. The nature of this soil is especially favorable to the white vine.

The gravelous or stony subsoils are very favorable to the wine. They present sometimes small siliceous stones or pebbles, white, gray, bluish, and transparent; these stones are termed "graves;" sometimes little blocks or stones of a dull opaque; sometimes also little pieces of stone or rock in the crevices of which the roots of the vine generally penetrate, thereby forming the base of a great hardiness and vigor for the plant, and of an agreeable, well-developed taste and flavor for the wines.

The sandy subsoils are suitable to the vine, because they permit its roots to penetrate to a great depth, to find the stability of temperature which is favorable to them. The most part of these soils produce a fine, delicate wine, but lacking sometimes in body and color.

The aliotic subsoils, sometimes ferruginous, are impervious as those of the argil and marl; they form a bed which arrests water, thereby rendering the earth too dry, especially if sloping; the water, following the bent of the incline, settles in the lower parts. When flat it is too damp, a defect, however, which can be easily remedied by digging up the earth to a certain depth. Under these circumstances, they are very much in request. The best vineyards in the Médoc are established on grounds of this nature.

CULTURE OF THE VINE.

Planting.—Before planting the vine the nature of the soil should be attentively studied, and the preparatory labor performed according to its species. It is most urgent that the vine should be sheltered from prolonged dampness; to this effect the earth must be disposed in such a manner as to regulate the slopes and facilitate drainage. If in a very hard, argillous land, called *terre tape*, or *boulbaine*, or *tuf*, the marl or silios should be found of shallow depth, the subsoils must be broken up to render them pervious and to mix them with the superficial layers of earth.

The earth, purified by the means above indicated, and by drainage

whenever it is essential, demands a most important operation: improvement and manure.

To manure the earth about the vine is always a most essential preparatory feature, at least when not operating upon alluvial soil, but when this is the case a liquid manure is sometimes employed and poured into the hole assigned to each plant. When planting superficial earth, which has not been before used for cereals, or which has not been manured for a long time, at least half a cart-load of manure is required for a row containing from 75 to 80 plants. In planting in feeble or used-up ground double that amount of manure must be employed. It is very important to have the plants well chosen; to this end it is only required that the foot or base should be healthy and vigorous, taking them only from branches having hitherto borne fruit. In certain communes each cutting has a little of the wood of the preceding year; but great importance is not attached to th s latter precaution, as many succeed as well in planting the young end. To replace the dead feet in a young plantation root-plants are sometimes preferred (called "chevelus" or "barbeaux") to the ordinary plants or layers.

This replacement is also made by "provins." The term "provins" is applied to a branch or tributary of the old vine-stalk, upon which new roots develop without separating it from the mother vine. In order to make a "provin" a long branch is left upon the old vine-stalk nearest to the one to be replaced, and if possible in the same row; a pit is then dug, about one foot deep, between the two plants; it is then filled up with mold or manure, if the earth be poor; the branch is then put into the pit without separating it from the mother vine, and the end raised in the place of the dead stalk; it is supported by means of a wooden stake, and requires to have its top cut off like the mouth-piece of a flute, care being taken that the bud should be on the side opposite the slope in order to avoid its being drowned or damaged by the flow ing of the sap. The severing of the "provin" is indispensable to prevent the mother plant from declining or even dying. The separation is begun after the second year by cutting on the branch a cross-section about one-third deep, and by completely cutting it the year after. These "provins," or layers, have the advantage of producing from the first year; it is admitted in the Médoc that every "provin" pays its expenses from the first year. The "provins" are made at the period when the sap begins to ascend into the branches, rendering them more supple; care is taken to make some slight incisions in the part of the branch lying under ground, so as to facilitate the growth of the roots. In the planting of the vine by layers I find that five different modes are employed in the department. The three first are the most extensively used.

(1.) *Planting by reversion.*—This mode is certainly the best, but also the most costly, inasmuch as the work for one acre costs about $117. It consists in opening trenches in the direction of the vine-rows, a sufficient distance apart; the first trench being finished, the earth coming from it serves to fill up the last; manure is then thrown in and the plants, or "barbeaux," are placed in, being supported by stakes. The next trench then undergoes the same operation, and so on to the end. Planted in this manner the vine produces early, but is not of long duration.

(2.) *Planting by staving and with a stake or bar.*—Another mode generally used when the subsoil approaches the surface of the ground and when its nature renders it accessible to dampness, were it not broken up, consists in turning up with picks the subsoil of alios or clay to a

depth of about two feet and mixing it with good earth or manure brought for that purpose. These operations being over, a crowbar is driven into the ground to make a hole, into which the scion is placed, and which is carefully filled up with earth all around the scion. Sometimes, in order to increase the adherence of the plant to the ground, it is watered with a kind of liquid mud or manure.

(3.) *Planting with the stake or bar.*—This mode is certainly the simplest and most economical, but can be employed only in loose earth easily perforated and comparatively fertile. Pulverized and liquid manure is generally employed in this mode of planting. It consists in thoroughly plowing and harrowing the earth, after which a hole is made with an iron bar. This hole is sometimes enlarged by means of a wooden cone armed with an iron point in order to increase the quantity of manure given to the plant.

(4.) *Planting with "araire" or plow.*—This mode, which is one of the less expensive, can only be used in deep soil. It is little employed. It consists in making a deep furrow by means of the plow and filling in with manure, placing the plants therein and covering the furrow.

(5.) *Planting in the little trench.*—This mode has been for a long time almost entirely given up. It differed slightly with the preceding method inasmuch as a little trench one foot wide and one and one-half deep was dug instead of a furrow. All of these plantings are generally made in the months of February, March, and April, even before, weather permitting, and can be continued up to the middle of June, on condition that the plants be kept underground in a northern direction, in order to prevent them from growing. Finally the plant is set upright, earthed up, cut at the third knot above ground, and fastened to a little stake.

During the first two or three years after planting, certain vineyards of Médoc are tilled six times yearly, but for the greatest part tillage takes place but four times during the year. The young vines at this period require particular attention; they must be freed from snails as much as possible, and each year the plants which have not thrived must be replaced by layers. If among the plants that have succeeded there should be one or more of any kind not wanted, these must be grafted. Grafting, which was formerly occasionally employed by the vine-growers, is every day becoming more universal; since the invasion of the phylloxera many fine plants have been ingrafted on American plants, which resist phylloxera.

Situation and care required by the vine.—For the ridges there is no fixed directions; the slope of the ground is previously consulted, in order to facilitate drainage without risk of the subsoil being carried away. Some vine-growers (when the ground permits) set their ridges from east to west, asserting that the wind and hail come from the west; by this method the first feet of each row alone are injured; the others, affording mutual shelter to one another, have less to suffer. It is noticeable that this direction of east to west is practicable only in the Médoc where the vines are very low, because the shade of any individual plant cannot be prejudicial to the others; nevertheless, it sometimes happens that the land is not evenly exposed to the action of the sun, which, of course, is not so favorable. Other vine-growers plant in the direction of north to south, so that the rays of the sun may penetrate into the vine rows as long as possible, in order to heat the surface of the ground and the different parts of the fruit in a more equal manner.

The soil, according to its condition, is tilled from two to four times a year, either by plow or by spade. The wages of laborers having doubled

of late years, the plow is consequently in greater use in most of the vineyards.

When the vine is stripped of its leaves and fruit laborers are employed to examine each vine row, in order to weed out the quick or dog grass, which is very destructive. The old vine plants are often covered with a kind of moss which serves as a refuge for crowds of injurious insects to the vine. Some proprietors take the precaution to destroy them during winter; others do not attach the same importance to them. Since the appearance of the new disease of the vine, some proprietors have obtained favorable results from barking, by which means a great number of insects and their eggs can be destroyed, including those of the phylloxera.

Another part of the winter labor consists in removing the earth brought by the plow or by the waters into the "capvirades," a kind of alley made between the rows for facilitating the running of water and for allowing sufficient room for the teams to turn.

After the pruning, which should take place as late as possible, on account of the spring frosts, the laths and decayed stakes are replaced; the branches or *hastes* are then fastened by means of a kind of rush to the nearest stave. The best season for this, as the *hastes* have frequently to be curved or bent, is when the sap begins to ascend into the branches, rendering the wood pliant. This work should be carefully avoided in dry weather. When once the vine is in good condition labor commences.

In the month of June the vine is nipped; that is to say, the sap is stopped from going into the "suckers," thus named because, though possessing much vigor, they notwithstanding are unfruitful. The shoots or sprouts appearing on the old wood are cut off (at least, those not intended to become fruit-bearing branches). In July the vine is somewhat freed of its suckers, in order that the air may circulate round the plant, and that the grapes may be better exposed to the solar influence. This also facilitates the passage of the plow.

In August the leaves are thinned. This work does not take place every year throughout the department, particularly in those vineyards which only produce common wine. Great attention should be bestowed upon this work, in order to avoid too much exposure to the sun, and at the same time aid maturation.

Pruning is certainly the most important operation that the vine claims from its care-takers. On this depends not only, in a great measure, the abundance of the crop, but especially the health of the plant. It takes place generally from the end of the fall of the leaf until the commencement of the hard frosts. Before this period the wood is not sufficiently ripe, and would cause the loss of a part of the sap. Later the cicatrice arising from the pruning would not have time to heal up before the sap ascends, and a serious flow would occur in spring. For some years past the vines have been considerably tried by spring frosts; it has therefore been judged wise, even at the risk of losing a small portion of the sap, to prune as late as possible, in order to retard the shoot. This is customary in the Burgundy vineyards.

It is recommended to vine-dressers, when operating, to have with them a little box of some fatty liquid, and to put a little of such on each wound made by the pruning, above all on the old wood, so as to protect it from the changes of temperature, which often cause the interior of the plant to decay. The pruning is conducted in two fashions: with a pruning-knife or with vine-scissors; this latter instrument is very expeditious. But in the Médoc, and many other places, they prefer the pruning-knife, with which the judicious vine-dresser carries on his work

better, without injuring the wood, cutting and paring here and there, where he thinks fit to do so, making incisions, lifting a very light piece of wood, &c. The vine-shears are preferable to the pruning-knife when cutting young vines which have no thick wood to take up. I shall not undertake here a treatise on the pruning of the vine, or an appreciation of the different modern systems. Such details would require a volume, and are consequently out of my compass. The value of these different systems is so intimately connected with the nature of the soil and its situation, and with the nature and vigor of the plant, that I cannot go further than commending practice, observation, and intelligence as the best guides to the vine-dresser. To the general information already given I may add the following fundamental principles:

Charge the vine only in accordance with its age and vigor; equalize the burden of the different arms of the vine, so that one side should not bear all the sap at the expense of the other; carefully save on each plant the short cuts which are intended to become fruit-bearing branches for the next year, and which, being low shoots, keep down the vine, which has a tendency to spring up.

In the Médoc the vine is planted in rows which, according to the vineyards, vary between 180 to 300 feet in length; the latter is seldom used, on account of the difficulty of transporting manure, gathering the grape, &c. In certain districts the rows are 3 feet apart; in others, a little less. The plants are more or less distant, according to their nature and that of the soil; this distance varies from 3 to 4 feet. The trunk of the plant is from 6 to 8 inches long, and fixed to a little stake about 15 inches high; laths are attached to the tops of the stakes, and to the laths are fastened the two arms of the vine. For some years past these wooden laths have, in several vineyards, been profitably replaced by iron wires. This system, which presents great advantages above all in an economical point of view, has been in use for the last twenty-five years by Monsieur Richier, the inventor, and by his heirs, in all of their vast vineyards.

The stakes are sometimes of pine, but more generally of chestnut wood; the latter cost from $2.30 to $2.70 the thousand, while the former, which do not last so long, cost from $1.35 to $1.55. The laths come from the west of the Médoc, where for some years past pines have been grown on a large scale. When delivered at the vineyard they cost from $3.85 to $4.80 the thousand.

Pruning.—On the first year of planting the vine is pruned from the two eyes nearest to the ground. The second year the process is performed in the same manner. The third year, when pruning, three or four buds are left untouched. In strong earth the weaker plants are cropped short; but two arms are left to the most vigorous plants. The fourth year, in light soils, arrangements are commenced for establishing the two arms; in heavy soil this operation is completed, the trunk of the vine is then made 6 inches high, so that when the plant is earthed up the arms start almost on a level with the top of the ridge. Special care should be taken that the arms follow the direction of the laths. The vine always having a tendency to rise, great attention is paid to save, when pruning, the short cuts which are intended to become fruit-bearing branches, in order to be able to cut off the old wood when it becomes too long. The fruit branches are chosen from those of the preceding year, near the old wood; the under branch is chosen by preference, so as to avoid the plant rising too quickly.

The branches are allowed 13½ or 15½ inches in length; they are fastened horizontally to the lath; this is intended to equalize the distribu-

tion of the sap, and to form at the base of the branches a proper wood for renewing the vine. One, two, and sometimes more of the last buds of the branches are taken off to increase the strength of the shoots produced by the others, and to facilitate fastening. As soon as the pruning is over, the branches gathered up, the different kinds of winter work concluded, such as the clearing of the dog-grass and of the moss covering the trunks of the old vines, the transports of earth conveyed from the alleys to the middle of the ridges, and the vines propped, plowing commences. Four plowings are made; the first one towards the end of February or the beginning of March. The object of this is to "open the vine," according to the expression of the country; that is to say, to unearth it; but as, in plowing on both sides of a row, the earth cannot be raised between each plant, women pass behind the plow with a hoe to take up the earth and spread it in the middle of the rows. The second plowing generally takes place in the middle of April, with a plow of a peculiar shape called "bent." Its purpose is to earth up the vine, so as to spread about the foot the earth taken off by the last plowing. When the vines are young or surrounded by the young plants, a woman with a shovel follows the plowman and lays her shovel between the plow and the young plants or layers, so as to avoid their being stifled or bent by the earth. The third plowing takes place in the month of May, before the flowering, and is exactly the same as the first one. The fourth takes place at the end of June, after the flowering; for this the special plow called the "bent" is again used. After the fourth plowing, women or children pass down the rows to raise the young bunches which are sometimes a little earthed up. It is also at this time of the year that the leaves begin to be thinned more or less, according to the strength of the vegetation and to the temperature.

In all vineyards a constant war has to be made against the destructive insects which swarm in them, especially snails. Many proprietors in the Médoc keep for this purpose hens and ducks, which go into the vineyards to feed on these parasites; but care is taken to remove them in due time, in order to avoid their injuring the new buds or attacking the grapes.

EXPENSES OF CULTURE IN THE MÉDOC.

The expenses of culture in the Médoc vary according to the communes, and, above all, according to the facilities of working. (1.) A small property cultivated by the hands living on the place has hardly any expenses beyond the keeping of the vine-dresser and his family. (2.) A large property requires a manager, with foreman, laborers, vine-dressers, &c. (3.) A middle-sized one is cultivated by the proprietor, who hires a team of oxen and oversees his laborers. Each of these properties not only has different expenses of culture, but obtains different prices for the products.

The "*prix-fait*," or "agreed price," is the name given to a certain space of ground, for the culture of which the price has been agreed in advance.

Expenses for a "prix-fait" composed of 24,000 vines, planted about one yard apart and occupying about six acres of land.

The following necessary expenses attendant on the vineyard are almost invariable:

Manual labor, for pruning, binding, lathing, &c	$43 42
Manual labor, for clearing away the dog-grass	4 63
Purchase of 10,000 stakes, at $2.02 the thousand	20 20

Purchase of 5,000 laths, at $3.86 the thousand	$19 30
Purchase of 10 sheaves of binding reeds, at $1.16 each	11 60
Four plowings and a winter supplementary plowing	52 11
One hundred and fifty days' wages to the women for raising the vines, destroying the insects, unearthing the young branches, &c., at 19 cents	28 50
Layers	7 72
Expenses of vintage for 5 tuns, at $6.75	33 75
Expenses of racking and other coopers' work	7 72
Purchase of twenty casks, at $3.47	69 40
Expense of delivery at Bordeaux for 4¼ tuns	4 82
	303 17

Expenses varying according to the nature of the soil and according to the proprietors.

Sulphuring: Labor and purchase	$7 92
Manuring 5,000 feet a year: Manual labor, at $2.70 the 1,000 feet	13 51
Purchase of manure or mold: 92 cubic yards, at $1.18	108 56
Cleaning of the trenches and vine-tracks, hauling earth, &c	17 37

General expenses incumbent on the vine domain.

Taxes, duties, &c	$25 09
Keeping the buildings in repair	9 65
Overseeing and sundry details	21 23
Keeping the stock in good order (wine-vessels, &c., wheelwrights, blacksmiths, farriers, &c.)	19 30
Wear and tear on teams, harness, &c	19 30
Renewal of the vineyard, 2 per cent. every year	46 32
Interest on advances, six months, at 5 per cent. per annum	14 79
Total general	606 21
Average yearly revenue, supposing the sale of 5 tuns (20 casks) of wine at vintage time at $168.87 per tun	844 35
To be deducted:	
7 per cent. discount and brokerage $59 10	
3 per cent. waste for 6 months 33 77	
	92 87
	751 48

If from this be deducted the expenses for culture ($606.21), there remains $145 27, representing the net yield of each "*prix-fait*," corresponding to about 6¼ acres (6.42), which makes $22.63 per acre.

If a vineyard of superior table claret be valued at $390.50 per acre, it will be found that it yields a net revenue of 5.80 per cent. per annum. Such a revenue can be obtained only by those who can afford to appropriate a certain amount of money to improve the estate. A yearly outlay of about $485 per acre is indispensable, and has to be repeated for several consecutive years before giving any profit, because the harvest is generally sold only after two or three years, in order to give the wine sufficient time to acquire its qualities and realize a fair price.

The sum of $485 per acre is overreached in some of the famous vineyards of the Médoc, where the care and treatment of the vines and wines are almost luxurious. Extravagance may well be afforded when the wines are sold from $380 to $580 the ton of four casks. In this case the capital represented by the vineyard is much more considerable than the foregoing valuation, and the price of the land rises proportionately to the produce of the vines and the price of the wines. The vineyards at Chateau-Lafitte are valued at nearly $4,700 per acre. On the other hand, there are many vineyards in the Médoc—in fact, the majority of them—whose wines at vintage time do not obtain quite an average of $168 per ton. Yet most of those vineyards are worth $390 per acre.

In fact, good management, a thorough experience in the matter, and money always in readiness, are indispensable conditions for success.

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Bordeaux, January 23, 1884.

FRUIT IN HAVRE.

Consul Glover submits the following:

Oranges, raisins, lemons, figs, and olives are not grown in this part of France, with the single exception of a few grapes, principally on garden walls and in hot houses. Neither the soil or the climate seems to be adapted to their culture.

Oranges, figs, and olives require a milder and drier climate than we have in Normandy.

AUSTRIA-HUNGARY.

GRAPE CULTURE IN AUSTRIA-HUNGARY.

REPORT BY CONSUL-GENERAL WEAVER.

In reply to Department circular of December 4, 1883, relative to the production and commerce in raisins and tropical fruits in this empire, I have the honor to submit the following report.

Although the raisin industry, strictly speaking, does not exist in this empire, and the production of figs, olives, oranges, and lemons is very unimportant, yet it is thought that the grape and wine industry and the commerce in tropical fruits may be of sufficient interest to the fruit-growers of the United States to warrant the transmission of the following items in regard to thereto.

The Austro-Hungarian Empire is situated between 42° 10′ and 51° 5′ north latitude, and 9° 10′ and 26° 15′ longitude east from Greenwich Omitting, however, its irregularities, the empire lies mainly between the forty-fifth and fiftieth degrees of north latitude and the twelfth and twenty-sixth degrees of east longitude, having, therefore, a rectangular form of about 350 miles in breadth by 750 miles in length, comprising an area of 261,272 square miles, with Bosnia and Herzegovina included. The mean latitude, therefore, of Austria-Hungary corresponds very closely to the northern boundary of the United States.

The climate of this country, however, is much less rigorous, as is well known, than that of the United States. The extremes of heat and cold at Vienna, which is located at about the center of the Austro-Hungarian Empire, were during the past thirty years 98° and 4° Fahrenheit, while the average yearly temperature during the same period was 10° centigrade or 50° Fahrenheit.

It may, consequently, be very confidently affirmed that in Austria-Hungary the winters are not as cold nor are the summers as warm as in the United States by probably from 8° to 10°, notwithstanding its higher latitude. The rainfall during the last thirty years varied at the 186 stations for meteorological observations in Austria-Hungary from 43 to 242 centimeters per year, equivalent to 17 and 95 inches.

These stations are grouped as follows: 41 in Hungary, 80 in the Al-

pine region and on the Adriatic coast, and 65 in Bohemia, Galicia, Moravia, and other interior provinces removed from the sea. The rainfall in these regions was respectively 28, 49 and 28 inches, making for the entire empire an average of 36 inches per year.

The average cloudiness of Vienna, estimating complete obscuration at 10, during the years 1853–'72 was 5.7, the months of July, August, and September giving a minimum of 4 and November a maximum of 7.4. Consequently the degree of moisture in the air is very large, averaging for Vienna during the last thirty years a humidity of 72, when reckoning complete saturation at 100.

The foregoing data will aid those interested to estimate the general influences of climate upon the production of fruit in this empire whose territory in general is usually far removed from the sea and other large bodies of water which might injuriously affect the grape crops by excessive moisture.

The same influences, however, arise from the large river system of this country, particularly in Hungary, to the end that the best vineyards are found upon the highlands and slopes of hills and mountains, of which Austria possesses a great number and variety.

GRAPE AND WINE INDUSTRY.

The methods of grape culture, as practiced in the neighborhood of Vienna, will be seen from the following reply of Robert Schlumberger, proprietor of valuable vineyards in the Vöslan region, given in response to certain inquiries as to soil, vines, crops, and the methods of cultivation practiced in his district. He says:

The methods of pruning the vine in the various wine-growing districts of Austria differ somewhat, and vary also in regard to the kind of grapes in the same part of the country.

In most districts, especially those to the south of Vienna, in the neighborhood of Vöslan, where the best red wines of Austria are produced, the branches are cut down to one or two eyes, and on each vigorous vine five to six branches are left. At a longer cut, the vines usually grown in the country, the Portuguese and Blue French, bear grapes superabundantly, producing an inferior quality and resulting in the exhaustion of the vines in a few years. A longer cut is only customary in regard to the Blue Burgundy and the St. Laurent vines, which, however, are not very extensively cultivated, at which operation either four eyes are left on each of twelve branches, or on a longer grape-bearing branch five to seven eyes, whilst the remaining branches are cut down to one or two eyes. During the subsequent year, the old grape-bearing branch is cut off and the strongest of the branches produced from the eyes of those cut down the preceding year will be employed as the grape-bearing one.

The soil in the vicinity of Vöslan and Gumpoldskirchen, where the most excellent white wines are produced, consists of a light flat and loamy ground, the subsoil of which near the mountains consists of calcareous rock and on the plain of alluvial gravel.

The fine wines grow on the slopes only. The valleys are left to the cultivation of other products.

In the plains, wines of inferior quality are produced, but in larger quantities than on the hills. The produce, however, is very uncertain on account of the night frosts in spring, which do great damage on the plains while the slopes are spared.

The soil in nearly almost all the vineyards of Austria is worked three times a year with the hoe: First in spring after the April cutting; second after the binding up and weeding at the end of June; and thirdly, at the end of July or early part of August.

In Vöslan and vicinity for the last fifteen years the soil has also been worked a fourth time, at the end of the vintage in October or November, by digging the soil as deep as possible in order to keep it loose during the winter, which has an extraordinarily favorable influence on the growth of the vine and renders the working in spring much more easy.

This example has often been followed, and in course of time no doubt this fourth working will be generally adopted.

In some districts, especially in Vöslan, in the plains and on some hills lately, the

vines were trained on wire frames after the French style, in order to be able to work the soil with the plow. The number of workings is the same as with hand work. The plows employed were mostly imported from France.

The full fruit-bearing period of a vineyard occurs at different periods, according to the situation, nature of the soil, &c. Most vines will fully produce the fifth year after the planting, but with some kinds, like Burgundy, this will happen the seventh or eighth year. The time during which the capacity of producing will last depends upon the situation, nature of the soil, and especially upon a careful working.

Some well-cultivated vineyards will give a good return even after thirty years, whilst neglected ones will lose their fertility much sooner. Vineyards on the plains which have often suffered from spring frosts also soon lose their fertility, whereas there are vineyards on the slopes which are more than fifty years old and still give a sufficient return.

Artificial irrigation is nowhere employed in Lower Austria in the cultivation of the vine.

The yield of one hectare,* without regard to the various ages, varies according to the situation, the nature of the growth, and the kind of grape.

On an average a return of 40 hectoliters† per hectare may be obtained in Lower Austria.

The value of a hectare of vineyard property in Lower Austria depends upon the district, and there again upon its particular situation, and varies from 400 florins‡ to 5,000 florins.

The working expenses naturally are unequal in the various districts. In Vöslau the same amount to 550 florins to 600 florins per hectare per year, including fertilizers, whereas they are much less in most of the other districts.

The vineyards of Austria-Hungary, in 1881, covered 1,192,446 acres; of which 440,722 acres belonged to Austria, and 742,724 acres to Hungary. The area cultivated varies very slightly from year to year.

The fruit gathered is almost entirely consumed for the manufacture of wine, as only 4,338 tons of grapes are reported as being sold for table consumption in Austria-Hungary in 1881.

Furthermore, the quality of grapes cultivated for wine are, as a rule, not suited for table use, being much less palatable than the well-known varieties in the United States, nor are they suitable for the raisin industry, as they possess neither size nor pulp sufficient for the drying process.

The average wine production of Austria-Hungary during the last five years, 1879–'83, amounted to 6,954,934 hectoliters, of which 2,603,956 hectoliters were produced in Austria and 4,350,978 hectoliters were produced in Hungary.

The average value was estimated by the departments of agriculture at Vienna and Budapesth at about 10 florins per hectoliter, being only 40 kreuzers, or 16 cents, per gallon, which is manifestly quite below the commercial value of even the most ordinary wines.

In Austria the chief producing districts are Dalmatia, Lower Austria, the Northern Tyrol, Styria, and Istria. The character of the Austrian red wines is lighter and cruder than those of France, while the white wines, in respect to quality, are inferior to those of the Rhine, but possess a larger quantity of alcohol than either those of the Rhine or the Moselle.

Among the finest and most celebrated Austrian wines stands the Vöslauer, while of the Hungarian the Tokay and Paluggay are the most noted.

The phylloxera appeared in Austria in 1872 in the gardens of Klosterneuberg, near Vienna, from some vines imported from Germany for experimentation. Chemicals were first employed; sulphuret of carbon placed about the roots of the infected vines, but without avail. Flooding was then tried with like results, and finally the total destruction of

* 1 hectare = 2.471 acres.
† 1 hectoliter = 26.43 wine gallons.
‡ 1 florin = 40.1 cents United States currency.

the vines growing in the infected district was enforced by law, but without satisfactory results, as the phylloxera was found several years after the destruction in a living condition upon the roots of the vines. So that the plague is extending from year to year, until in Austria in 1883 there were 4,000 vineyards, aggregating 612 hectares, infected.

In Hungary, during the past several years, experiments have been made with imported American vines, with great success it is affirmed, but the Austrian Government until now has refused all applications for permission to import American vines, on the ground that insects equally dangerous to agriculture might be imported with them; consequently only the seeds of the proper varieties of grapes have as yet been imported and planted in Austria proper, but the growth is so slow that the result cannot yet be declared.

Unfortunately there seems to be a difference of opinion, and probably of interest, among the experts of this country in regard to the importation of American vines, for while one party cry out loudly against the arbitrary action of the Government in refusing the introduction of the American vines, which they claim to be the only salvation for the decaying wine industry of this country, the other party as violently attack the projected move, and deny that success has attended the same either in Hungary or in France.

COMMERCE OF WINE AND ARGOLS.

The importation of wine into Austria-Hungary in 1883 was 4,167 tons, valued at 1,492,552 florins, against an export of 40,818 tons, valued at 7,555,938 florins.

The prices of the imports were taken at 26 florins per hectoliter in barrels, 50 florins per hectoliter in bottles, and 100 florins per hectoliter for champagne, while the prices for the exports of these classes were, respectively, 18, 50, and 70 florins.

The imports and exports of wines during the last five years, 1878–'82, were as follows:

Years.	Imports.		Exports.	
	Quantities in metrical centners.*	Value in silver florins.	Quantities in metrical centners.	Value in silver florins.
1882	39,409	1,509,884	410,427	9,150,777
1881	30,271	1,311,270	438,213	8,852,684
1880	32,912	1,236,816	905,841	15,539,957
1879	106,580	1,888,986	434,674	7,105,068
1878	91,268	1,896,735	222,140	5,125,267

*1 metrical centner=100 kilograms=220.46 pounds avoirdupois.

The origin of the wines imported to this country cannot be definitely given, except for the champagne which came from France, via Germany, to the amount of 5,346 hectoliters in 1882 and 4,284 in 1883.

Of the total importations of wine in 1882, 21,388 metrical centners crossed the German frontier, 8,867 the Roumanian, 4,933 the Servian, 2,103 the Italian, 1,846 via Trieste, and 185 via Fiume and other ports.

Of the exports 182,477 metrical centners crossed the German frontier, 85,938 passed out by Fiume and other ports, 62,708 by Trieste, 37,625 passed over the Italian frontier, 13,690 the Swiss, 13,297 the Roumanian, 9,477 the Russian, and 4,994 the Servian.

Wines to the value of about $50,000 are shipped annually from this country to the United States; it is affirmed also that large quantities of red wines are sent from Hungary to France to be manufactured into claret, &c., and the large quantities shipped from Fiume and Trieste would seem to give credit to the charge.

The quantity of raisins and dried currants imported into this empire is very considerable, amounting in 1882 to 6,991 tons, valued at 2,473,682 florins, on which a duty of 711,744 florins gold was paid, being at the rate of almost 30 per cent. They entered almost entirely by the port of Trieste.

The duties on wines imported into Austria-Hungary at present, according to the general tariff law May 25, 1882, are as follows: In casks or bottles, 20 florins per 100 kilograms. Italy and Roumania, however, enjoy special privileges by virtue of conventional tariffs for the frontier traffic, by which they pay respectively 3.20 florins and 5.26 florins per 100 kilograms in place of the 20 florins of the general tariff.

Champagne pays by the general tariff 50 florins per 100 kilograms, but the recent commercial convention with France reduces the duty on French champagnes to 40 florins per 100 kilograms.

The total amount of duties collected on wines in Austria-Hungary during 1882 was 552,144, against 362,316 florins in 1881, and 365,881 florins in 1880.

The commerce in crude tartar or argols has become very important of late years; the exports amount annually to over 1,000,000 florins. The following table gives the quantities and values of the imports and exports during the last five years, 1878–'82:

Years.	Imports.		Exports.	
	Quantity.	Value.	Quantity.	Value.
	Met. cent.	*Florins.*	*Met. cent.*	*Florins.*
1882	3,651	310,335	11,505	1,035,450
1881	4,745	403,325	12,362	1,112,580
1880	4,352	348,160	15,572	1,373,620
1879	3,157	220,990	8,826	661,950
1878	4,069	264,485	4,849	339,430

The shipments of argols were made almost entirely to or through Germany, amounting in 1882 to not less than 11,188 metrical centners. Considerable quantities of these, however, were in transit to the United States, as the value of the invoices of argols authenticated by the consular officers in Austria-Hungary during the last three years shows large increase, being as follows: In 1881, $174,537; in 1882, $254,041; and in 1883, $342,445.

PRICES AND CONSUMPTION.

The average import and export prices of wines, as estimated by the Central Commission, are respectively about 40 florins and 20 florins per hectoliter, being equal to $1.60 and 80 cents per gallon.

The prices at the vineyard cellers generally run from 12 to 15 florins per hectoliter for the ordinary red and white wines, and from 25 to 40 florins for the finer qualities.

The prices at which the various wines are retailed for consumption are so varied as almost to defy any approximate average price; but it must range somewhere between 75 kreuzers and 1 florin per bottle, con-

taining about four-fifths of a quart, to the end that the average price of a gallon of wine in Austria-Hungary may be set down at $1.50.

The average annual production of wine during the last five years is given at 6,954,934 hectoliters, the importation at 60,088 hectoliters, and the exportation at 482,259 hectoliters, leaving for consumption an annual average of 6,532,763 hectoliters, equal to 172,595,598 American wine gallons.

If, therefore, the average price stated above be not excessive, which can hardly be the case, the total annual average value of the consumption of wine in Austria-Hungary amounts to $259,000,000, equivalent to a pro rata of $7 per year for each inhabitant. If to this amount we add the value of the beer annually drunk in Austria-Hungary, 12,000,000 hectoliters, equal to 317,000,000 wine gallons, valued at $79,000,000, we have a grand total of $338,000,000 as the value of the wine and beer annually consumed in the Austro-Hungarian Empire.

TROPICAL FRUITS.

The cultivation of oranges, lemons, figs, and olives is quite unknown in this empire, with the exception of olives, which are cultivated to a limited extent in Dalmatia and Istria, where the olive orchards cover about 50,000 acres, from which constantly decreasing crops are gathered.

In 1880 the manufacture of olive oil in these provinces amounted to 34,983 tons, but fell off in 1881 to 7,561 tons, and in 1882 to 1,122 tons.

The commercial movement in tropical fruits in Austria-Hungary is considerable, consisting, however, almost exclusively of imports, there being no exports whatever reported in the fullest official publications, with the exception of 2,853 metrical centners of olive oil in 1883.

The imports of figs, lemons, and oranges, and olive oil during the last five years, 1879–'83, were as follows, given in metrical centners:

Years.	Figs.	Lemons and oranges.	Olive oil.
	Met. cent.	*Met. cent.*	*Met. cent.*
1883	127,219	80,254	142,125
1882	120,929	70,006	76,242
1881	121,507	76,254	81,489
1880	125,268	54,781	88,950
1879	144,908	58,107	129,913

The importations arrive mainly from Italy and via Trieste, which last include in general fruits from Turkey, Greece, and Sicily.

The annual value of the tropical fruits, including dates, raisins, almonds, and chestnuts, imported into Austria-Hungary, amounted to 6,962,439 florins in 1882, on which was paid a duty of 1,411,530 florins, gold.

JAMES RILEY WEAVER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, April 8, 1884.

TURKEY.

FRUIT CULTURE IN TURKEY.

REPORT BY CONSUL-GENERAL HEAP, OF CONSTANTINOPLE.

RAISINS.

1. "What is the relative position of vineyards; valley, table, or hill-side lands, inland or on the seaboard?"

In this district and throughout the Levant there are vineyards on the table-lands, on the hillsides, and in the valleys—both inland and near the sea-coasts; but the positions preferred as the most suitable for growing the vine are on the slopes of elevated and sheltered undulating lands, or on the sunny sides of the lower hills that do not lie too near to the sea-coast, or are naturally protected by higher lands from the cold winds and fogs that arise in the neighborhood of the sea-shore at certain seasons.

In the island of Cos, which is called the "Paradise of the Sultana grape," and in many other places in the Levant, nature has protected the vine by the best possible shelter.

The steep slopes of hills are often planted with vines, and nothing can be more suitable than situations where patches of good soil are mingled with bare rocks, nor anything more beautiful than the rocks covered with foliage and rich fruits.

2. "How near the sea-coast are the nearest raisin vineyards?"

In some places, especially in the islands of the Archipelago, on the shore of the Marmora, and on the coast of Caramania, vineyards extend down to within 50 yards of the sea-shore.

3. "On the coast are the sea fogs and mists injurious to grapes and apt to cause mildew? If so, what means are used to counteract the same?"

Near the sea-coast, sea fogs and mists, especially when frequent or of long duration, are very apt to injure the vines, particularly those growing nearest the sea-shore; but to check and counteract their injurious action the plants and fruit are sprinkled lightly with powdered sulphur, the sprinkling being repeated two or three times if after the first application the rain should wash the sulphur off before the heat of the sun has had time to complete the sulphuration required.

4. "What is the custom of pruning in the best-conducted vineyards?"

In the opinion of foreign planters, the system in vogue here of pruning and "backing" is rather the carrying out of a hand-to-mouth principle than the application of a scientific or economic idea, because the wholesale, ruthless pruning is often done, first, to get a second crop; second, to ripen the grape quickly, or rather prematurely; third, to allow the sun to color the grape a rich golden hue; and, fourth, to admit of greater facility in getting around the plants.

Vines "backed" and pruned in the native fashion in summer, unless they are planted in deep, strong, and heavily manured soil, become prematurely old, and their yield diminishes yearly, until at last they become quite unprofitable.

But in the best-managed vineyards extensive pruning in summer, especially of the foreign vines, is regarded by foreign vine-growers as robbing the plant of its lungs, and that, too, at the time when all its

breathing powers (leaves and branches) are most wanted. Happily, both systems have been tried and found to prosper here.

5. "What is the character of soil where the best results are obtained?"

A cultivator who wishes to plant a vineyard that will give profitable results should have considerable scientific as well as practical experience to guide him in the selection of the most suitable ground for the purpose, as any defect in the nature of the soil or in its position, both as regards exposure to the sun and protection from cold winds, might render the enterprise abortive.

The vine dislikes a damp soil, but will thrive in almost any open ground with good drainage. In rich, deep soils it grows luxuriantly, but on shallow, dry soils the fruit, though less abundant, is of finer flavor, especially where the earth is ferruginous.

6. "Are best results obtained on hillside, valley, or table land?"

The best results are obtained from vineyards planted in good soils on the hillsides, the next best being those situated on undulating table-lands, and afterwards from those planted in the valley, especially where the vines are most exposed to the influence of the sun, and best protected by nature against dry, hot winds and sudden and unseasonable currents of cold air.

7. "Are the lands planted to vines cultivated? If so, how many times per year?"

Lands cultivated by native farmers are first turned up about the end of June, with rude plows or implements of husbandry of the most primitive description. In some places the young vines receive little care beyond being occasionally hoed and partially cleaned of weeds and couch grass (*Triticum repens*). In other places they require and receive more care, and have to be manured once in two or three years. On lands in the vicinity of Constantinople, cultivated by foreigners, many of the local methods of culture have been retained, to which the aid of the most economical implements has been added, together with the science, art, and practical skill that have brought the vines of France, Spain, and Italy to so high a degree of perfection.

When about to lay out a vineyard on virgin lands, foreigners sometimes plow the earth first for wheat, and after the wheat has been harvested they turn the soil again, so as to allow the sun to get at the roots of the couch-grass, which is the only sure method of destroying this enemy of the young vine. New varieties are raised from seed, but the ordinary modes of propagation are by layers and cuttings. Fine varieties are sometimes budded or grafted on less valuable ones.

Besides the native grapes grown for the purpose of making raisins, native wines, and for food, special kinds have been introduced into the country especially for the manufacture of wine for exportation. Within the last ten years upwards of a million of plants, costing from $5 to $10 per thousand, and embracing thirty-seven varieties of the best French vines, have been introduced, acclimatized, and successfully cultivated. A French company, with a capital of $500,000, in five hundred shares, has purchased estates near Heraclea, on the Roumelian (European) side of the Marmora, with the view of producing wines for the French market. The vines are cultivated in rows, about a square meter being allowed to each vine, which enables the numerous processes of cultivation to be carried out promptly and efficiently, and permits the cultivator to inspect the plantation with scrupulous minuteness.

The planting of the vines in rows sufficiently wide apart to give free passage between them allows the sun free access to all the plants alike, and facilitates the carrying out of certain operations, such as hoeing,

pruning, dressing, powdering, destruction of insects, &c., upon the proper performance of which the quality of the vintage and sometimes the very existence of the vineyard depends. This system, besides offering these palpable advantages, allows the whole of the cluster to ripen equally, and precludes the possibility of unripe grapes getting mixed up with the ripe ones. The fruit can, moreover, be more promptly gotten in than in the case of vines cultivated on the system known in France as "*en foule*," where they are allowed to grow closely together and at random. Although some vine-growers are in favor of this system, common practice in France and other vine-growing countries has shown that its disadvantages outweigh its advantages. The vine must have equal exposure to the sun on every side, and to facilitate the many operations which promote a good vintage it must be of easy access.

When the ground has been selected on which a *new* vineyard is to be planted, it should be carefully trenched by digging with fork and spade to a depth of 2½ to 3 feet, the earth being thrown up in a series of rows. This long and expensive operation has to be repeated several times. It is generally done late in the fall or in the winter, when the ground is damp and soft. Great care must be taken to remove all stones, roots, and other hard substances. The ground is then ready to receive the tender shoots, which are generally planted 3 feet apart. Then begins the long and unprofitable period, during which the vines must be tended with unremitting care in order to bring them to maturity and fruitfulness.

Many open and hidden enemies threaten the life of the young vine, and it is only by resorting to methods which are sometimes elaborate and expensive that it can be safely reared.

While the grower in Turkey has no such pest to contend against as the deadly phylloxera, he has several species of vine-fretters, including the aphis or *puceron*, the vine saw-fly, the grub, and numerous other small insects which infest both the young and the old vines, to tax his patience and science.

The most dangerous enemy of the vine-grower is the vine mildew, a fungus of the genus *Oidium*, which forms a white, delicate, cottony layer upon the leaves, young shoots, and fruit of the vine, causing brown spots to appear on the green parts, and finally a hardening, and the destruction first of the surface, and, if not taken in time, of the whole vine, root and branch. A rusty or moldy vine if left to itself soon becomes worse than useless, because it not only cumbers the ground, but communicates its deadly taint to its healthy neighbors. The *Oidium*, however, can be easily kept down, and if taken at its first appearance is generally stamped out by one or two applications of sulphur.

Concurrently with these elaborate precautions against the numerous dangers which threaten the safety of the whole vineyard, other duties claim the constant attention of the grower. The growing plants must have the earth continually hoed around them, special care being taken not to disturb their feeble roots; in seasons of drought each plant must be carefully watered, and when its leaves and tendrils begin to shoot, the vine must be continually trimmed, dressed, and pruned, so as to induce a strong growth without reducing its productiveness.

During the first year the grower does not, of course, expect to gather grapes, nor even in the second year, but he considers himself fortunate if at the end of that time all has gone well. He may hope for a few grapes the third year, but it is not until the fourth year that he has a real crop to reward him for all his pains and outlay.

8. "At what age do the vines come into full bearing, and how long do they remain fruitful?"

When properly cultivated, the vine blossoms from about the 25th of May to the 5th of June. The flowers are small, of a greenish-white hue, and fragrant. Seventy to seventy-five degrees Fahrenheit generally suffices to ripen the grapes, and they mellow between the end of August and middle of September. The vine comes into full bearing in its fourth or fifth year, after which it continues very fruitful up to its thirtieth or thirty-fifth year. Its stem sometimes attains a diameter of eighteen inches, and it is said that in certain instances the vine has lived upwards of three hundred years.

9. "Is there any system of artificial irrigation in practice for raisin culture?"

When any system of irrigation exists at all in this country it is generally of the most primitive kind, such as trenches supplied with water by the aid of the *manganos*, or water-wheels of the natives. But properly speaking there is no system of artificial irrigation usually employed, and as a rule the cultivators depend mainly on the showers and dews, which generally feed and refresh the vines during their growth. Of course advantage is taken of springs or small streams that may exist in the neighborhood of the vineyard to secure as long as possible a sufficient supply of water from such natural sources, and where they exist the vines are generally well watered, and as often as they require to be.

10. "What is the yield, value, and cost of crop per acre per annum?"

The crop varies according to the nature of the soil, the seasons, the position of the vineyard, and the degree of care and attention bestowed on the vines. An acre of good vine-growing land in Turkey will, as has been proved by repeated experiments, give from 616 to 880 gallons of wine. It is estimated that when the vineyards held by French companies at Omurtshed and Heraclea, which contain about 10,000 acres, have attained full maturity, their vintage will be about 6,160,000 gallons.

The following is an estimate of the cost of laying out a one-acre vineyard, with the working expenses, for five consecutive years, and the probable profits during the first five years if cultivated according to the French system:

Trenching, &c	$116 16
Planting 4,000 vines, hoeing, &c., first year	38 72
Digging, pruning, hoeing, &c., second year	38 72
	193 60
Less 60 gallons wine, at 70c	42 00
Loss	151 60
Digging, pruning, hoeing, &c., third year	38 72
	190 32
Less 140 gallons wine, at 70c	98 00
Loss	92 32
Digging, pruning, hoeing, &c., fourth year	38 72
	131 04
Less 300 gallons wine, at 70c	210 00
Profit	78 96
To be placed against cost of plant, cellar, casks, &c	78 96
Digging, pruning, hoeing, &c., fifth year	38 72
Less 500 gallons wine, at 70c	350 00
Profit fifth year	311 28

VARIETIES OF RAISINS PRODUCED.

The principal varieties of grapes grown in the Levant are the following: the "Sultaninas" (without kernels), the "Tchaouche," the "Amigdala" (on the island of Scio), the "Psilaroga," the "Robola," the "Caramisali," the "Resaki," the "Roditis," the "Koutoura," and the "Mavreli."

The "Sultaninas," "Tchaouche," "Amigdala," "Robola," and "Resaki" are white; the "Psilaroga" both black and white; the "Roditis," red; and the "Saramisali," "Koutoura," and "Mavreli" are black.

The finest quality grown in the neighborhood of Constantinople is the "Tchaouche," which is remarkable for its size and fine flavor, and is the most esteemed for the table. The French growers admit that for the table (and unpreserved) its quality is unequaled, with the exception of the "Sultanina." The other varieties, especially the black, are used chiefly for the manufacture of wine. Besides affording a wholesome article of food to the local population, considerable quantities are exported to Russia and elsewhere.

PROCESS OF DRYING RAISINS.

The raisins of commerce are dried grapes, prepared by two different methods.

One method consists of partially cutting through the stalk of the ripened bunches and allowing them to shrink and dry upon the vine by the heat of the sun.

The raisins prepared by the other method are gathered and hung on lines or laid on prepared floors to dry in the sun. When dried they are dipped in a hot lye made from wood ashes or barilla, with water, until the filtered fluid has a specific gravity of about 1.1; to this are added, for every four gallons of lye, one pint of olive oil and four ounces of salt. After dipping, the fruit is laid on hurdles of wicker work to drain, and is exposed to the sun for about a fortnight. The raisins are then pulled from the stalks and packed in boxes for export.

DISTILLED SPIRIT FROM GRAPE SKINS.

From the skins of the grape a spirit is distilled called "mastic" (the gin of the East), which is largely used by the natives, both Turk and Frank.

RAISIN TRADE.

The raisin trade much exceeds in importance that of figs.

The three principal kinds known in commerce are the "Small Sultana," the "Large Red," and the "Large Black."

The "Sultanas" are chiefly taken by England and Germany; about three-fourths of the "Large Red" go to Trieste, Germany, and Holland, and the "Black" were until lately almost entirely for Constantinople, Salonica, and the Danubian provinces. But the growing manufacture of raisin wine in France draws an increasing quantity of raisins to French ports. Vast quantities are taken by distillers in all European countries.

Quantities of raisins produced.—A well-kept vineyard in Asia Minor ought, it is calculated, produce an average of 7 tons of grapes to the acre. In the Turkish custom-house returns for 1880–'81 the valuation of the raisins exported from all Turkey was $4,393,655, but this sum is evi-

dently incorrect, as trustworthy statistics give the exports from Smyrna and the neighboring district for the same period as follows:

	Value in Smyrna.
Black, 528,278 kintals, of 112 pounds each	$2,522,397 18
Red, 185,754 kintals, of 112 pounds each	1,077,084 06
Sultanas, 173,237 kintals, of 112 pounds each	1,002,907 13
Say 49,687 tons, valued at	4,602,388 37

During the last two years the quantities produced have increased, but the quantities exported have not been published.

Raisins come principally from the neighborhood of Smyrna, the shores of its gulf, and the valleys of the nearer rivers. Quite three-fourths of the laboring population are said to be Greek Christians, and the remainder Turks. The highest prices are obtained for the Karaburnu fruit, which was recently quoted as high as 18 cents per pound for red raisins and 24 cents for Sultanas. The black raisin ranges as low as 3 cents per pound on the spot. The total yield of raisins in the Smyrna district, which was 48,000 tons in 1871, and only 31,000 tons in 1872, had risen in 1879, in consequence of the general planting of new vineyards and the greater facilities of transportation from the interior, to the large quantity of 75,000 tons.

While the quantity produced has been increasing so largely, the prices, instead of falling, as in the case of figs, have considerably risen, principally, no doubt, in consequence of the vine diseases in Western Europe. It may be mentioned, however, that the removal of the stalks adds much to the value of an equal bulk of fruit, and forms an important element in the rise of prices. About fifteen years ago the practice of stripping the red raisins from their stalks commenced at Tchesmi. This rendered them more salable, and they afterwards were classed with "Eleiné" (choice). The practice also applies to the Sultanas and the black fruit.

Most of the fruit grown in the immediate districts of Smyrna is known as "Yerlis," and in the island of Samos a red "Muscat" grape is produced, which goes in barrels to Holland and Austria, there being scarcely any demand for it in England. These exports for 1882 amounted to $35,000. About Aïdin, where the population is almost entirely Turkish, a small black and not very sweet raisin is grown in large quantities. Half are kept in the country, and the rest, which bring a low price, go, without their stalks, and packed in bags or barrels, to Russia, Greece, France, and Trieste.

Packing.—The manner of packing the fruit differs according to its destination, in order to meet the requirements of the markets. The best "red raisins," whether with or without stalks, are packed in boxes of thirty pounds, except for Russia, where they go in barrels of 250 pounds. The "Sultanas" for Trieste are sent in boxes of 12 pounds, and they go to England in larger boxes of 22 pounds. To Germany and Holland they go in cases of 30 and 60 pounds. The "Large Black" raisins are generally exported in barrels of about 370 pounds each, and the *Eri Kara* of Smyrna are shipped in sacks.

FREIGHTS.

The freight charged by steamers for raisins is at present $8 to $8.50 per ton, but it is sometimes as high as $10.32 per ton to Liverpool for small lots. Freights are not quoted to the United States, as there is no direct trade.

Besides the foregoing, some five or six thousand tons of grapes are converted into wine exported annually from Smyrna. Considerable quantities of wine are also exported from Roumelia, principally through Constantinople, to France, where it is converted into French clarets, but the quantities have not been ascertained.

Among the other districts which produce considerable quantities of grapes may be mentioned that of Broussa, the islands of the Archipelago, and Roumelia. During the season 1881-'82 the wine produced in the Kirkillisia region alone was 3,581,907 gallons. The vilayet of Trebizond produced in 1882 3,790,300 pounds of grapes, but very little in any shape was exported.

ORANGES AND LEMONS.

1. "What variety of trees are grown, and which are the most valuable? At what age do they come into full bearing, and how long do they remain fruitful?"

Although there are other kinds in the Levant, only three varieties of oranges and four of lemons are commonly grown, of which the oranges known as "Candian," "Syrian," and "Mandarinian," and the lemons as "Candian," "Chio," "Paros," and "Messina," are considered the best. There is, however, a variety of lemon (the *Citrus lumia*) called the "sweet lemon," of which the juice is sweet. This is much used by calico printers in patterns with dyes containing iron, to produce greater clearness in the white parts.

As will be shown in answer to interrogatory 2, they vary as to the periods of coming into full bearing, according to the manner in which they are propagated, the grafts coming into full bearing long before the seedlings have come to maturity.

2. "Are the trees seedlings, grafted, or budded?"

The trees are grown both from seedlings and from grafts. Lemons are generally propagated first from the seeds of the wild orange, as it has been found that the wild fruit tree bears the cold better. When three years old the plants from these seeds are taken up and replanted in other places, and the year following the lemon plants proper are grafted upon them. Five years afterwards they begin to bear fruit, and at fifteen years they reach maturity. When great care is bestowed, inarching is practiced, but growers generally prefer to propagate by grafting, while always rearing a portion of the trees from seedlings and from cuttings, especially the latter.

3. "Are the trees troubled with injurious insect pests or fungous growth? If so troubled, what are the means employed for preventing and curing same?"

Unless carefully tended, both orange and lemon trees are frequently injured by small canker worms and moths, which eat the leaves, &c. Powdered charcoal ash is placed on and around the trees, which destroys the eggs of the worms, &c. Sometimes a mixture of charcoal soot and strong vinegar is sprinkled on the tree once or twice, as may be deemed necessary.

Unlike the orange, which presents a fine close head of deep-green foliage, the lemon forms a straggling bush or small tree 10 or 12 feet high, with paler, more scattered leaves, and short angular branches, with sharp spines in the axils.

In damp valleys the lemon is liable to be attacked by a fungus (the *Dematium monophylium*) which covers the stem, leaves, and fruit with a black dust. Trees grown in the shade and not properly exposed to sun-

ight suffer most severely from this cause. Syringing with milk of ime when the young insects are hatched, and before they have fixed hemselves on the plants, is found to be the most effectual remedy known for these pests.

4. "How far apart are orchard trees planted?"

In some places 7 to 8 paces; say 18 feet is considered a sufficient distance between both kinds of trees, but generally there is no strict rule for either.

5. "Are orchards inland, or on the sea-coast, hillside, valley, or upland? Where do they yield best results?"

Orchards and orange gardens are to be found thriving in almost every situation suitable for the cultivation of the grape, but they give the best results when situated on hillsides or gentle slopes, where, together with a good supply of moisture underground, they are exposed to a gentle heat by day, and fresh, cool breezes by night. As before mentioned, they suffer and fade when deprived of light as well as warmth, and they never prove successful when the ground is damp for long in the summer or is not properly drained. Both oranges and lemons thrive in a rich soil, and succeed well in good strong clay with moderate care and attention.

Although it is not the best situation for them, both lemons and oranges can be grown close to the sea-coast, especially lemons, which are more hardy than oranges.

6. "How near to the sea-shore are the orchards?"

They are strongest in the Archipelago, and on some of the islands they flourish almost anywhere as long as their roots do not come in contact with salt water.

7. "Is there any system of artificial irrigation in use, and is the ground in orchards between trees cultivated; if so, how many times a year?"

When the trees are young they are generally well watered by hand during the summer, but there is no system of artificial irrigation in general use, and the ground receives a similar treatment to that bestowed on the vineyards cultivated by the natives, as before mentioned.

8. "Give the yield, proceeds, and cost of cultivation per acre per annum in the best orange orchards."

Oranges, when gathered for export, should be quite ripe. Those fully formed and with the color just turning from green to yellow are chosen. They are wrapped in fine paper or in the husk of Indian corn. A tree 20 feet in height and occupying a space of about 20 feet in diameter will frequently yield from 3,000 to 4,000 oranges in the course of the year. Many trees live from one hundred to one hundred and fifty years. As lemons are more profitable to grow than oranges on account of their keeping qualities and their being less liable to injury during voyages, their cultivation is preferred in many parts of the Levant. The lemons are gathered green; the finest are picked out and packed in cases containing about 420 fruits; also in boxes, three of which are equal to two cases, each lemon being separately wrapped in paper.

The little island of Andros produces ten millions of lemons annually; they are exported to Constantinople, the ports of the Black Sea, and those of the Danube, realizing an average price of $4.80 to $5.75 per 1,000. A similar quantity of excellent quality is exported from the larger island of Chio, where they are gathered in May, and a second crop in November and December.

Great numbers of "sweet lemons" are grown in the islands of the Archipelago and the districts around Smyrna.

The greater part of the oranges are grown in Candia and in Syria, especially in the neighborhood of Jaffa. In Paros, Mitylene, Tenedos, and Samos both oranges and lemons are largely cultivated for exportation. The dried and candied rind of the bitter orange, known as "orange peel," is largely used in flavoring confectionery.

Cost of cultivation, and profits.—Owing to the different methods of cultivation in different localities, the wide difference in the cost of labor, and the frequent irregularities in the amount of the crops, especially of oranges, it has been impossible to ascertain even approximately what it would be safe to consider an average yield and the cost of cultivation per annum of an acre of the best orchards.

OLIVE CULTURE.

Green and black.

1. "What varieties of trees produce the best results, and at what age?"

Through cultivation an olive slip becomes in twenty to twenty-five years a tree of from twenty to forty feet in height. The kind known in the Levant as the "thafnoyah" produces the fruit best suited for the table, and it is generally grafted. When grafted they give fruit in three or four years, but when planted in slips they seldom bear fruit in less than fifteen years, and the best results are not obtained until they have reached the age of from twenty to twenty-five years. Other descriptions are grown more especially with a view to the manufacture of oil for exportation and domestic consumption.

2. "What is the process of cultivation followed?"

As a rule the olives grown in this country receive little cultivation after the young trees reach maturity. At the end of autumn or early in winter a trench of 2 to 3 feet in diameter, and from 18 to 27 inches in depth, is dug round each young tree and filled with animal manure more or less rich according to the age and strength of the tree. The manure is well covered with soil so as to prevent its being disturbed, and to keep it as long as possible in the position best fitted to feed the roots of the tree. The ground between the trees is generally neglected.

3. "What variety of tree produces the 'queen olive of commerce'; are they the selected fruit of the common olive, or a superior variety grown from an improved tree?"

The "queen olive of commerce" is almost unknown here. It is the pick of the largest and finest fruits produced by the best olive trees of Spain.

4. "At what age do the trees come into full bearing, and how long do they remain fruitful?"

The olive tree generally comes into full bearing about its twenty-fifth year when it has been grown from slips; but when grafted it yields abundantly between its eighth and twelfth year. In both cases it continues to produce largely every alternate year for about fifty or sixty years, and if cultivated as mentioned above it will continue to yield fruit, though less largely, up to the age of one hundred years.

5. "What is the average yield per acre of mature trees?"

Under ordinary circumstances a young healthy tree that has reached maturity will produce in a "poor" year about 82½ pounds, and with careful cultivation the same tree will yield in a "good" year double that quantity.

6. "What is the yield in fruit per acre, and how many gallons of olives are required to produce one gallon of oil?"

The trees vary in yield every alternate year. An acre will contain 120 trees, and each tree will yield an average of about 100 pounds of fruit; the produce of the acre will therefore be about 12,000 pounds. As it takes about 60 pounds of fruit to produce one gallon of oil, the yield of the acre will be 200 gallons.

In Smyrna, &c., a few new mills have been constructed to be worked by steam, but elsewhere the mills continue to be worked on the old system, notwithstanding the urgent necessity of substituting improved machinery.

7. "How far apart in the orchards are the trees?"

The trees are generally planted in rows at about 20 feet apart, but in some places they are grown much closer, especially on the steep slopes of hills. In the islands of the Archipelago, where the land is often broken and irregular, they are planted in places where the soil is so arid and barren that it will hardly grow anything else.

8. "When are olives intended for picking picked—ripe or green?"

When olives are intended for pickling a small portion is plucked while green to be pickled in that state; but the larger portion of the fruit intended for preserving is gathered when it has fully ripened and has turned black. It is preferred in this state by those who relish the oily flavor, and there is a large consumption of black pickled olives in Turkey.

9. "When are olives for oil picked—ripe or green?"

Oil of a superior quality, but small in quantity, is extracted in some districts from green olives that have been plucked or have fallen from the trees; but as a rule olives specially intended for producing oil are picked only when they have become quite ripe and black. It is chiefly from the seed-vessel that olive oil is obtained, and not from the seed, contrary to the general rule of the vegetable kingdom.

10. "What is the process of preparing olives for table use, and what is the process for extracting oil?"

To preserve black olives for the table, the fruit is packed in casks or boxes with a layer of common salt, three-quarters of an inch thick, at the bottom. On this is laid a layer of olives about two and a half to three inches in depth, upon which a light covering of salt is sprinkled, and so on until the cask or box is filled, the upper layer of salt being deeper than the others except the lower one. The staves of the cask are left loosely bound to allow the bitter water from the olives to drain off. When they are drained the hoops are tightened.

To preserve green olives for the table.—The fruit, after having been washed, is packed in casks in its natural state. The casks have a small hole bored in the bottom to allow the water to run off slowly. They are filled with olives to about 3 inches of the top, and the cask is then filled to the brim with fresh water once in twenty-four hours, until the bitter taste of the fruit has all but passed off. The hole in the bottom is then plugged, an aromatised pickle is poured on the fruit, and after the pickle has taken effect, a little oil is added to soften the olives and reduce any bitterness that may remain in excess of what is required to give them piquancy or an agreeable savoriness.

Extraction of olive oil.—In the interior the method practiced to extract oil from olives is probably the same as was employed in the earliest times. The fruit is collected in a large bin, near the mill where the crushing is done. The mill is simply a large, circular, shallow tank, with an upright beam in the center, which runs through a large stone, and serves as the pivot around which the stone revolves. A horse har-

nessed to a horizontal pole attached to the stone sets it slowly and laboriously in motion. An improved apparatus consists of two stones attached to the horizontal pole, and are dragged round with it. These machines resemble the Mexican arrastra for crushing quartz. The one last mentioned is the most effective of the two, as the stones describe a larger circle, but it requires greater power. The olives are crushed, but the oil is not expressed. When a sufficient quantity of the fruit has been thrown into the tank the machine is set in motion, and a man precedes the horse with a pole armed with iron to push the olives under the stones. After a few rounds a couple of gallons of water at boiling heat are poured in to assist the action of the stones, and more is added as required, until the mass acquires the consistency of a thick paste. The mass is now put into a large jar, and conveyed to the press, where it is kneaded with more hot water into a thinner paste, and as often as it is emptied into a shallow dish it is emptied into a square cloth of the same coarse material of which the cloaks of the country people are made, which will bear the greatest power of the press without bursting. A man forms the paste into a square flat mass, folds the cloth neatly over it and ties it with a string attached to each corner, and places it in the press to the number of sixteen or seventeen cloths. The press is turned down by means of a hand lever, and when more power is required a rope is carried from the lever to an upright rotary beam at some distance, which two men turn round with bars rapidly.

The oil and water expressed run into a trough before the press, which though rudely hewn from a log of wood is constructed on principles showing a knowledge of the relative specific gravity of oil and water. The trough is divided into two parts longitudinally by a partition, which comes up to about two inches below the level of its sides, so that when the oil and water run in together on one side of the partition, the oil coming to the surface floats over to the other side, while the water is conveyed away by a pipe placed at the level at which it is desired to maintain the water within the trough. After the press has been screwed down as far as it will go, it is loosened and hot water is poured upon the pile to wash off any oil that may remain on the cloths, and they are kneaded without being unfolded. More boiling water is poured upon each package, and they are again placed in the press, to be again removed and undergo for a third time the same process, until no oil remains.

The oil comes out a light green color, and is poured into a large jar near the press, whence, after depositing any water or dirt it may have, it is poured into skins. It is next emptied into large earthenware jars, four or five feet in height, where it remains for at least two months till all impurities are deposited.

Olive oil is refined by agitating it with a saturated solution of caustic soda which renders the whole soapy; but after a time the oil precipitates a saponaceous deposit, and the remainder becomes quite clear and pure and is then poured off. It is now of a yellowish color with a slight odor and a milder taste. The bark of the olive tree has been used extensively by the French instead of cinchona, and large quantities of excellent soap are made from the refuse of the olive oil.

11. "Are best results obtained on valley, hillside, or table land?"

The best results are obtained on the sides of lower hills, when the land is of a suitable nature; but very good crops are obtained from trees growing on the higher table-lands.

12. "What is the character of soil best adapted to olive trees?"

Although the olive tree will grow on almost any kind of ground

where it can obtain nourishment, it thrives best in a rich argillaceous soil, which is neither too damp nor too dry. It grows in the greatest perfection in the fine rich clays which, in many parts of the Levant, cover the hillsides.

13. "Is there any system of artificial irrigation in use for olive culture?"

When the plants and trees are young they are sometimes watered in a rude fashion, but there is no system of artificial irrigation in olive culture.

14. "How near to the coast are the olive orchards?"

Although it is not the most suitable situation for them, olive orchards are sometimes planted near to the sea-coast, and in such places may be frequently seen extending to within a few yards of the sea-shore. In these situations they often suffer from exposure to cold winds, and are not so healthy.

15. "Give the yield, proceeds, and cost of cultivation per acre per annum."

Around Smyrna, in Candia, Chio, and other islands of the Archipelago, more time and labor are bestowed on the cultivation of the olive than it receives elsewhere in Turkey. However, as even there, in certain districts, the natives attach unequal or secondary importance to this culture, very considerable differences are to be found in the cost of cultivation as well as the yield of this crop. Owing to these and other reasons, especially the absence of clear and regular accounts among the native farmers, it is impossible to give a correct statement of the yield, proceeds, and cost of cultivation per annum of an acre planted in olives.

16. "What is the annual rainfall in inches in your district?"

The annual rainfall in this district during the last four years was:

	Inches.
In 1880	22.33
In 1881	25.76
In 1882	20.42
In 1883	29.55

In the three years first mentioned the annual rainfall was comparatively light, and it was only in 1883 that it reached the average of the ten years from 1870 to 1879, inclusive.

Production of olive oil in Crete.—The island of Crete (Candia) is the most important olive oil producing district in Turkey. The olive harvest for the season 1883–'84, just ended, is considered unusually small and of poor quality. It only augmented by 742,500 gallons the stock of oil remaining from 1882–'83 in the hands of merchants and with the cultivators. This result was foreseen in consequence of the exceptionally fine crop of 1882–'83, which exceeded the expectation of the most hopeful growers. Never, in fact, had Crete been known to produce so abundant a crop of olives or one of such good quality.

The following returns show the difference between the last and the preceding crop:

District.	1882–'83.	1883–'84.
	Gallons.	*Gallons.*
Khandia	4,125,000	220,000
Candia	6,875,000	412,500
Rethymo	2,750,000	110,000
	13,750,000	742,500

Of the crop of 1882–'83 there were exported to—

	Gallons.
England	3,300,000
Russia	1,100,000
Austria	750,000
Germany	275,000
Turkey	577,000
Egypt	412,500
Syria	137,500
Anatolia	357,500
Barbary	192,500
Other places	75,000
	7,177,500

Owing to the excellent quality and the low price of the oil produced in France that season, there was almost none exported to that country. The local consumption of Crete amounted to 3,272,500 gallons, and the soap works on the island absorbed about 2,200,000 gallons. Considerable stocks remain on the island. The sellers who know that a good crop is always followed by a bad one prefer to hold their oils in the expectation of a rise in prices, which cannot fail to come. At the commencement of the olive harvest, oil was selling at $1.39 to $1.41 the 2¾ gallons, while on the 1st of March last it was quoted at $1.67. In London the oil is selling at this date at $174.66 per ton weight, gross.

PRODUCTION OF OLIVE OIL IN TURKEY AND TUNIS.

In the last published customs returns the value of the exports of olive oil from Turkey is stated to have been $15,306,544; and of soap, $8,776,856; amounting together to $24,082,400.

Since the occupation of the vassal province of Tunis by the French the exportation of oil has fallen, the exports being in 1880, 385,233 gallons; in 1881, 230,760 gallons; in 1882, 282,385 gallons; besides 160¾ tons of soap, and 4,117 tons of husks of pressed olives, valued at about $31,000.

FIG CULTURE AND PRODUCTS.

1. "Kind of trees producing the figs of commerce?"

The fruit of the fig tree may be reckoned among the staple foods of man for ages before cereals were cultivated by any settled agricultural population. In the temperate regions, where it thrives best, it fills the place of the banana of tropical climates, and yields fruit during several months of the year. In Asia Minor, where the tree is found wild, and where the best figs of commerce are grown, it is extremely fruitful.

The best figs for drying come from the valleys of the Meander and the Kaistros, to the south of Smyrna, where the trees are planted with great regularity and care, and the ground is dug and hoed from four to six times during the summer. When the figs reach Smyrna they are sorted by women and packed in boxes by men. They are best when newly packed, and as months go by get drier and harder in the warehouse. No one who has not eaten them in the Levant, packed in the ornamental drums in which they are sold for local consumption, knows what the best figs are like. The cardboards of the fig boxes are supplied chiefly by Belgium and Austria.

Two seasons ago 54,000 camel loads of four hundred weight each had reached Smyrna by the 22d of October of that year; and the production increases annually. Fifteen years before that time not more than half that amount was recorded for the whole season.

England, Germany, and the United States take the greatest part of the figs exported. France, where the smaller and much inferior figs of the Mediterranean are consumed, takes little of the finer kind of the fruit of Smyrna.

The improved facilities of transport which have so much increased the stock brought to market have also brought down prices. Taking averages, prices ranged about ten years ago from $4.08 the kintal (112 pounds) for Aidin figs, to $8.75, for Elémés, while the very best, the Ekinis, sometimes brought $19.22 the kintal, or nearly 16½ cents per pound. Now, small parcels of excellent quality bring about $6.60 the kintal.

Although throughout the world there are to be found about one hundred different species of figs, only some five or six kinds are cultivated in this country. Of these, the best description are called Elémé, and are grown most largely, and in the greatest perfection in the districts around Smyrna; but considerable quantities are also grown in other parts of Asia Minor. The fruit is of various colors, from deep purple to yellow, or nearly white. The tree usually bears two crops, one in the early summer from the buds of the previous year, and the other in the autumn from those of the spring growth. The last forms the chief harvest.

2. "Yield per acre, and process of cultivation?"

The trees are propagated by seeds and suckers, and frequently by layers and cuttings. When young they require care in pruning, and the immature fruit formed late in the summer should be removed to strengthen the shoots.

The *Ficus carica*, which yields the well-known figs of commerce, is a bush or small tree, rarely more than 18 or 20 feet in height, with broad, rough, deciduous leaves, very deeply lobed in the cultivated variety, but in the wild plant nearly entire. After the young tree attains maturity it receives but little care beyond being occasionally lopped in places and being well manured in the fall of the year. The fruit begins to ripen at the end of June, and the summer yield, which gives employment to a large population, comes to market in immense quantities in September and October. The trees sometimes give a third crop, which ripens after the leaves have fallen.

3. "Process of drying and curing the fig?"

When ripe the figs are picked and spread out to dry in the sun, the sugar which they contain in abundance being thus rendered available for their preservation, those of better quality being much pulled and extended by hand during the process. Thus prepared, the fruit is packed closely in barrels, rush baskets, or wooden boxes for commerce. Recently the practice of preserving fresh undried figs has been adopted, but the amount used in that form is as yet insignificant compared with the quantities that are preserved by drying.

OBSERVATIONS.

Figs, especially when fresh, are largely used by the local population as an article of food. The trade in this fruit is of long standing and of very considerable importance in this country. During the year 1880–'81 Smyrna and district exported 6,991½ tons, worth at the port of shipment $1,646,998.89. The exportations were principally to England, Germany, the United States, and France. In one fortnight no fewer than 195,000 barrels, cases, bags, boxes, drums, and baskets of figs and raisins were shipped from Smyrna alone. The export trade of figs at the other Turkish ports is unimportant in comparison with Smyrna. Figs are grown

largely in the other provinces of Turkey, but the quantity exported is small compared with Smyrna. They produce but little more than is sufficient to meet the local demand, but if railroads existed in the interior the production would be immensely increased.

It is probably not generally known that a considerable quantity of the inferior kinds of figs find their way to the Austrian "chicory coffee makers," and the French brandy distillers. Much liquor labeled "Fine champagne," "Cognac," &c., owes its origin to the refuse of the Smyrna fig market.

G. H. HEAP,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Constantinople, April 10, 1884.

SALONICA RAISINS.

REPORT BY CONSULAR AGENT LAZARO.

The best position of vineyards is the hillside lands of the interior, at least two miles from the sea-coast.

No raisins are made here.

There are some places on the plain where mist and fogs occasion mildew, for which sulphur flour is used.

The vines are pruned in the month of February.

The soil where the best results are obtained is a pebbly, sandy loam, and on warm, south-side positions.

The ground is hoed in ridges once a year, and is afterwards weeded. Before the grapes are ripe the ends of the vine are pruned one yard from the root to give strength to the plant.

Vines bear fruit the third year and are in full bearing the fourth. When well tended they remain fruitful for fifty years and over.

Irrigation is not practiced in this district.

The yield varies with the position. The best fruit is grown on dry soil, but it is less abundant. Generally the yield is from 3½ to 10 tons per acre per annum. Prices vary from $15 to $20 per ton of 2,000 pounds. The cultivation of vineyards costs about $28 per acre per annum.

As to the climate of this district, it is mild; the severest weather is limited to two months and a half; snow seldom falls, and ice never forms over half an inch thick. The greatest heat, which occurs in July, is about 90° Fahrenheit.

The total yield of grapes in this district is unknown, for want of any kind of statistics. It is supposed, however, that two-thirds of the vintage are exported in the shape of native wine, manufactured simply by extracting the juice and keeping it a couple of months. The rest is consumed at home in grapes and wine.

Exportations are made in barrels to Constantinople, Alexandria, Roumania, and Servia. French buyers purchase much of the wine of this province to remanufacture it in France and convert it into French wines.

P. H. LAZARO,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Salonica, February 19, 1884.

ENGLAND.

FRUIT CULTURE IN ENGLAND.

REPORT BY CONSUL LATHROP, OF BRISTOL.

Eight consecutive years of excessive wet have induced British farmers to look about for products to cultivate which are less dependent on the weather than those now grown. Inability to compete with other countries, notably the United States, in the ordinary farm products, has also contributed to this end. But for their extreme conservatism the farmers would long ago have acquiesced in "accomplished facts" and would have ceased to compete against nature and the United States; but they have struggled on, in the belief that because their fathers and grandfathers grew grain, they must do the same. But earnest efforts are now being made by agriculturists and land-owners to induce the farmers to change their methods. One authority suggests tobacco for certain counties, and says it has been successfully grown in years long past and can be done again; another says to make pasture and grazing lands of the wheat area; a third advises a turning of general attention to fruit-growing, and says, "Leave the grain to America; we cannot compete, but in fruit growing we can; our climate is suitable; there is ever a great and increasing demand for both fresh and preserved fruit, and we have the immense advantage, in preserving, of cheap sugar." This latter is no mean advantage when we consider the rapidly increasing use of preserved fruits and jam, which are becoming a common article of food throughout the country, not as a luxury, but as an inexpensive and delightful substitute for butter. Jam sells in England at from 4 to 10 cents a pound less than butter, and goes farther. It is less of a rarity to many poor children than butter.

Though the effect of a large increase in fruit acreage would not be felt for some years, and though experience has proved that the demand for fruit increases with the supply, yet the tendency (as yet *only* a tendency) of the British farmers towards fruit culture is worthy of the attention of our fruit growers and canners. The annual production of fruit in Great Britain is reckoned to be about 9,000,000 bushels, and a third of this amount is absorbed in the manufacture of cider and perry.

The following table gives the imports of fresh fruit from the various countries in 1871 and 1882, respectively:

Name of country.	1871.		1882.	
	Number of bushels.	Value.	Number of bushels.	Value.
		£		£
Germany	69,519	22,104	515,604	151,096
Holland	160,392	59,543	444,886	182,876
Belgium	276,286	95,822	593,158	669,164
France	354,606	214,542	524,683	335,543
Portugal, Azores, and Madeira	73,979	57,081	133,124	81,245
Spain and Canary Islands	59,712	48,795	462,082	277,757
United States	56,441	40,604	1,065,076	387,190
British North America	55,150	37,004	222,128	90,077
British West India Islands	10,063	10,750	20,168	15,810
Other countries	12,520	9,863	14,197	7,581
Channel Islands	.....	.....	50,584	20,574
Total	1,128,568	596,107	4,055,691	1,718,907

The home product added to the import makes a total of about 10,000,000 bushels of raw fruit per year. Even if we allow nothing for the large proportion of this which is used for preserving, it represents, when divided amongst 32,000,000 inhabitants, an individual consumption of raw fruit so small as to be capable of almost indefinite extension. Intending fruit-growers count with certainty upon a much greater individual consumption when supplies are larger and prices are lower.

It will be seen from the above table that the United States supplies Great Britain with twice as much fruit annually as any other country. A large proportion of this import consists of apples. Farmers and consumers are firm in the opinion that England cannot produce an apple equal to the finer kinds of Canada and the United States. The Canadian Ribston pippin will generally command $5 a barrel more than the English apple of the same name, and the Baldwins and Newtown pippins and the Swayzie Pomme Grise are considered unapproachable. But the scientific cultivators who are now so earnestly advising the general cultivation of the fruit, say that it is absurd to say that England cannot produce apples equal to those of America and that English apples will not keep so well. "A few changes only are necessary; certain improvements in the system should be made," they say. No one has yet found, however, to my knowledge, an English apple equal to the finest imports from America. Still, vast improvement in their quality is sure to result if the present slovenly modes of growing and packing are abandoned in favor of more scientific methods. In Devonshire, one of the great apple-producing counties of England (which by the way has only added 358 acres in ten years to its fruit acreage), it is said that fruit cultivation is precisely now as it was a hundred years ago. "The trees are so close together that the grass under them is almost worthless, and they are in far too many cases unpruned, moss-covered, and decaying." The same is true in a less degree of Worcestershire, Somersetshire, and Herefordshire. It is said that much of the finest fruit land in the kingdom produces less than a third of what it ought, and that third of an inferior quality. The enormous local consumption of cider in the past has had a good deal to do with this culpably negligent cultivation. Farmers cared for their apple trees only that they might make cider for their laborers. But the laborers now are fewer, and many besides prefer beer, so that while the general demand for fine cider has increased largely, the local demand is much diminished. These new conditions will probably bring more attention to the orchards; and the broad flood of light which is now being thrown onto present methods and future needs and possibilities, will accomplish still more in the same direction; so that, no doubt, we shall have a steady improvement in methods resulting in a gradual improvement of the product. But even when the English fruit-grower produces an apple equal to the American, he has much to learn before he can successfully compete with it. He must know how to store it, a thing seldom or never done now. The result, of course, is an occasional glut in the markets, resulting in an enormous waste of fruit. He must know how to "dry" and to "dehydrate," and must borrow or devise varied means of using the surplusages that will sometimes come to perplex the large fruit-grower. He must, most important of all, learn from us or from the French a more careful system of picking and packing and sorting. If we take two lots of apples in London, one from New York, one from Devonshire, we are almost certain to find the former in the better condition, simply on account of the care taken in picking and packing. I regret to say that an occassional lot comes from America in such a condition as to leave no doubt but that an unscrupulous shipper had taken advan tage

of the uncertainty always attending such a cargo, to get rid of worthless stuff. No redress is possible in such a case, it being difficult to prove that the consignment was not shipped in good order. A curious instance of some of the anomalies of transportation occurs in connection with this apple import. An American shipper has been known to get a through rate from New York to London via Plymouth, by which his consignment reaches its destination for a less price than the Devonshire fruit-grower can send his, though they may both be in the same train from Plymouth to London.

If the more perishable fruits are to be largely grown in England, better methods of transportation must be introduced. Refrigerator-cars must be more largely used. There is sometimes a glut of fruit in one market when in another, not 20 miles away, there is scarcity almost approaching a famine. Methods for temporarily preserving fruit when large quantities ripen together must be introduced by means of "pulping," boiling with little or no sugar, &c., the stuff to be worked up subsequently at leisure.

All these things will come in time if there is a fixed determination to supplant the continental imports of "soft fruits" and the American import of apples. Imports of fresh fruits into England have quadrupled during the past ten years, while during the same period only 16 per cent. was added to the fruit acreage of the country. If the soil and climate be so favorable as is claimed for producing fine fruits, the next decade will probably show an unprecedented increase of fruit acreage.

American apples compete more directly with English fruit than any other importation, inasmuch as the other fruits, mostly brought from the continent, come before the English product ripens. The best plums come from France before English plums are ripe. Cherries, rather inferior, come first from Algiers and Spain, and afterwards a better quality from France, all before the English fruit is on the market. Currants and gooseberries come from Holland and Belgium simultaneously with the ripening of the home product, but they are inferior. French peas are better than English, and are in the market at the same time. They are packed and sorted with great care.

In the ten years ending in 1882 only 26,692 acres were added to the fruit lands of England. The most important of these plantings was that of Lord Sudeley, in Gloucester. He is the first of the large landowners to turn his attention to methodical fruit-growing on a large scale. He has planted between 500 and 700 acres in a fairly rich soil on the Lias formation. It was deep plowed and thoroughly manured, and apple, pear, plum, cherry, and damson trees set in, 16 feet apart; 3,000 apple trees, including Lord Suffields, Keswick Codlins, Grenadiers, Cellinis, Warner's King, and all the best kinds, were planted; the choicest French varieties of pears were selected; 44 different kinds of plums, making 32,000 trees, were planted. Gooseberry or currant bushes and strawberry plants are set out between the trees to the number of hundreds of thousands. The whole orchard is surrounded with thick belts of poplars and Scotch firs to shelter from wind. Several acres are planted with osiers to make baskets for the fruit. Buildings near at hand have been transformed into factories for the preserving of the fruit. Every conceivable pains has been taken in this experiment to render it a success, and its progress is being watched with great interest. If it results as well as its promoters hope and deserve, it will stimulate fruit-growing largely in Great Britain.

LORIN ANDREWS LATHROP, *Consul.*

UNITED STATES CONSULATE,
Bristol, February 29, 1884.

CONTINENT OF ASIA.

FRUIT CULTURE IN ASIA MINOR.

REPORT BY CONSUL STEVENS, OF SMYRNA.

In answer to your circular-note of December 4, 1883, submitting interrogatories concerning the cultivation of fruits in this province, and requesting full details of all its phases for the information of fruit-growers in the United States, I have the honor to report as follows:

The vilayet of Aïdin contains about 35,500 square miles, and has a population of nearly 1,000,000. It is the most productive and in all respects the most important section of Asia Minor. It lies in latitude north 38° 28′ 7″, west 1° 50′ 44″ longitude of Constantinople, compared with the meridian of St. Sophia. Two considerable rivers flow through it. The arable surface is made up of valley, table-land, and hillside. The soil, except in the more mountainous districts, is extremely fertile and easily tilled. The climate is mild and admits of field labor at all seasons of the year.

The cultivation of fruits, figs, and raisin-grapes, especially, is extensively carried on. Smyrna figs have a world-wide reputation for excellence. The raisins produced are also of superior quality. The natural conditions are favorable, and to this fact more than to the methods pursued in cultivation must be ascribed the success attained. To reach the fullest development of which these fruits are capable, a semi-tropical sun, unobscured by clouds during the summer months and early autumn, is needful. A wet winter and early spring with a dry summer and autumn are conditions most desired by the cultivators of these fruits, and indeed for nearly all the other crops of this region. The accompanying table, marked A, showing the amount of the rainfall in Smyrna for each month, beginning with the year 1864, and ending with 1882, will be found useful in this connection. To enable American fruit-growers to estimate the influence of climate upon the raisin product here, it should be stated that, even in mid-winter, frosts are very infrequent, and the freezing point is rarely reached. The spring is very short, the transition from the cold rains of winter to the balmy breezes of summer often being almost immediate, but the hot season does not set in until the middle of May. From that time until the middle of September, the thermometer ranges from 78° to 90° in the shade. For weeks successively there is very little variance in the temperature. Both in winter and summer the wind for long intervals blows from one quarter. On the seaboard the heat of summer is tempered by a breeze from the sea, called "imbat," which blows fresh and strong nearly every afternoon.

Coming now to the specific interrogatories, I submit the fullest information obtainable upon the subject of the

CULTIVATION OF RAISIN-GRAPES.

The vineyards are located on table-lands and hillsides, the latter always facing the south. The soil of the former is sandy and of a light red color, the alluvion of torrents; that of the latter, calcareous and

yey. Vines planted on the plains are more productive than those ınted on the hillsides, but do not last so long, the latter continuing good bearing condition for well nigh a century, while the former be- ne barren at the age of thirty years, sometimes sooner. The quality the hillside product is far superior.

ın the vicinity of Smyrna vines are planted near the sea-shore, but ›re are flourishing vineyards in localities from 7 to 20 miles inland. ıeyards planted near the sea-shore are often injured by mists and :s.

Four kinds of raisins are cultivated, viz, Sultanas, Red, Black, and ıscadine. The Sultanas are not palatable while fresh, and are market- e only when cured. The Black and Red are excellent while fresh, l are put in that condition on the local markets in large quantities. ere is also another variety of black grape which is cured and shipped France, where it is used in the manufacture of wines. The wines de in Smyrna are the product of the same variety of grape.

The vines on the coast run the greatest danger during the months of ırch, April, and May, from the cool, damp mists blown in from the . The losses sustained from this cause are frequently from 20 to 30 · cent. of the total yield.

Pruning is done in December and January with small, sharp saws, ·ved at the end. The branches are cut about 1 foot 6 inches from the ›und. Care is taken to do this work during the first and second ırters of the moon.

Vines are planted from the beginning of March to the middle of April, ording to nature of soil and atmospherical conditions, the ground ring been dug the previous summer to a depth of 3½ feet. This man- · of planting was introduced here some twenty years ago by emigrants m the Grecian Archipelago, and gives the best results. Another and er method is to plant fields which have been plowed over three or r times by the plow of the country, which dates back to the infancy ıncient Greece!

The cultivation of vines in vogue here is as follows: In November nches are dug round the vines and filled with manure. Six weeks er, as above stated, the process of pruning begins. During January, bruary, March, and April the vineyards are dug twice only, the first ıe at a depth of 1 foot 6 inches, taking care, of course, not to injure the ts, and the second time very lightly, in order to destroy the weeds ich absorb the moisture necessary to the plants. The process of tering vineyards is not in favor with the growers of this province.

The Black, Red, and Muscadine vines begin to yield in their third, but not reach their full strength until their fifth or sixth, year. The ltana vines begin to bear in their fifth and attain the maximum of ›duction in their seventh or eighth year. A good, healthy plant will ›duce about 25 cwt. per acre, but the average yield is from 10 to 15 t. per acre.

The grapes begin to ripen about the 1st of July, the Sultanas being › earliest. Their vintage begins towards the end of July and lasts the middle of August. The vintage of the Red grape begins by the l of August and lasts till the 20th of September; that of the Black the early days of September, ending with October. The Muscadine gathered during the second half of August. An excellent wine is de with this variety, but in small quantity. Less than 5,000,000 lons of wine are manufactured annually in this province, although › best materials are at hand and in great abundance.

It happens occasionally that rain falls during the vintage time, caus- · heavy losses to growers through the inevitable deterioration of

quality. This was the case last season, and large quantities were in consequence shipped to France to be made into spirits.

The work required in the cultivation, gathering, and curing of the grapes is performed by hand, and, notwithstanding labor is cheap, is rather costly. The average yield per acre per annum is valued at about $88. The value of vineyards per acre is about $440, and the cost of a crop per acre, tithes to Government included, is nearly or quite $50.

The exports of black raisins amount yearly to from 800,000 to 900,000 cwt.; 70 per cent of this quantity is shipped to France; the remainder finds its way to Austria, Germany, Russia, and Roumania. The best quality of black raisins is exported to Roumania, to the extent of 45,000 cwt. per year. In general, the crop of raisins of all qualities and kinds, in the province of Smyrna, amounts to about 1,900,000 cwt. It is yearly increasing. Out of this quantity 650,000 cwt. consist of Sultanas, 80 per cent. of which is exported to England, 10 per cent. to Russia, and 10 per cent. to Germany, Austria, and the United States.

ORANGE AND LEMON TREES.

Orange and lemon trees are not cultivated to any considerable extent in this province, on account of the severe cold which occasionally prevails during winter. There are only a very few orchards in Smyrna and Bournabat, a village 12 miles from this city. Hence I am not able to answer specifically the interrogatories under this caption.

The islands of the Archipelago and of the Mediterranean, Scio, Naxos, Candia, and several cities on the coast of Syria, Joppa and Beirut, are the only localities where these trees are cultivated extensively. The fruit finds its way to the interior of Turkey. The exports of Russia have increased considerably since the establishment of a regular Russian line of steamers between that empire and the coast of Syria.

Cedres.—The island of Naxos, one of the Cyclades of the Kingdom of Greece, produces large quantities of cedras, which formerly were of little commercial importance. Of late years this fruit has found a ready market and steady demand in the United States. The cedras, cured in a special way and packed in barrels, reach their destination in good condition.

OLIVE TREES.

The olive is not as extensively cultivated here as in the islands of the Archipelago and Mediterranean—the Sporades, Cyclades, and Ionian Islands. The reason for this is easily understood. The olive tree will not thrive inland; it must be planted near the sea-coast. Plantations are prepared in this manner: Vigorous young trees, which grow wild upon the sides of the neighboring mountains, are taken up and transplanted in the plain or hillside. After remaining two years in the field they are grafted. Seven or eight years after the grafting process they begin to bear, reaching the maximum of productiveness from the eighteenth to the twenty-fifth year. They yield every other year. When transplanted the young trees must be watered once a fortnight during summer until they reach their fourth year. If well protected they will continue fruitful for two hundred years or longer. Trees planted on stony hillsides yield more abundantly and of a better quality than trees planted on plain land. They should be planted about 36 feet apart.

The manner of cultivating olive trees is to plow or dig over the ground every year about a foot in depth, adding manure every third year at the foot of each tree and covering it up with earth. The mature tree will yield about 530 pounds of olives yearly.

The varieties which give the best results are known as "Thrillies";

and "Adramitis," after the localities where they are grown. The "queen olives of commerce" are produced from an improved tree grown at Adramitis.

There are two species of olives, and these are, when ripe, green and black, respectively. Those intended for pickling for table use are gathered green-ripe; they are put in salted water and allowed to remain until ready for use. These are of the black variety. Green olives also yield good oil for table use, but in much smaller quantity.

The most productive olive orchards in this province are at a distance of 1 to 3 miles from the sea-coast.

A description of the manner of gathering this fruit and expressing and preparing the oil may prove interesting:

During the season of the crop the fruit is collected and salted, then stored away from one to three months. At Mytilene and Aïvali the olives are kept even during five or six months before the oil is abstracted. It is claimed that the larger the quantity of salt used in this process the finer the quality of oil obtained. The fruit, packed in baskets containing 50 pounds each, is put into boilers and boiled for half an hour; then it is withdrawn and spread on a circular surface, where it is ground under a large millstone driven by horse-power. The horse is always followed by a workman whose care is to throw the olives under the stone with a shovel. The olives, first coarsely ground and then carefully pounded, are placed in bags made with goats' hair, which are put, from 20 to 24 at a time, under a powerful press, operated by two workmen, and then squeezed until no oil flows out; 6¾ pounds of good olives give 2½ pounds of oil. The oil gathers in a trough placed under the press, and is then withdrawn and poured into casks. The olives intended to be used at table are put into stone jugs or barrels, after having been carefully washed, and are covered over with strong brine. In this condition they will keep good for a whole year.

An answer to the question, "What is the annual rainfall in inches in your district?" will be found in the table submitted herewith, marked A.

FIG TREES.

The cultivation of fig trees in the neighborhood of Smyrna and in the interior is carried on to a considerable extent. With the exception of the district of Aïdin, the figs are excellent while fresh, but lose their flavor and color when dry. The figs so well known in the United States, England, Germany, and Russia are grown in the district of Aïdin. When fresh, these figs are not palatable; when dry, they are delicious, and unrivaled by the product of any other locality.

The planting of fig trees in the valley of the Meander, where are situated the fig orchards of Aïdin, is performed in the following manner: Fresh branches about 2 feet in length are cut from the tree and planted in a field which has been previously tilled seven or eight times during the warmest months of summer. The fig cuttings must be put in the earth to the depth of about 1½ feet, and at a distance of about 20 paces one from the other. As each branch is planted, a stick of the same thickness must be put by its side to keep it straight. Three or four times yearly the field is tilled with a plow, and then it is sown with corn or barley.

The fig tree gives fruit towards the seventh or eighth year of its growth, but does not attain its maximum of yield before its twelfth or fifteenth year. It thrives at a distance of 50 miles from the sea.

The fruit, perfectly ripe and partly dry, falls from the tree by itself, and is collected by the grower and spread in the sun for several days on an even and clean surface until it becomes fit for the market. The

figs of superior quality are those collected when perfectly ripe and while the north wind blows. Each tree yields on an average from 40 to 100 pounds of fruit. Trees one century old usually yield from 2 to 3 hundred weight. What would seem extraordinary is the fact that fig trees from Aïdin planted in other localities never give good results; the trees grow well and become very strong, but yield fruit inferior in quality to the commonest local variety.

A fact worthy of notice is that in a plantation of figs male trees must always be found in order that the female trees may yield fruit and keep it until maturity. The male tree is much smaller in size. It gives fruit of the size of a filbert, whose only use is to impregnate the female tree by the means of small insects, which come out of it and creep into the female fruit from the eye of the fully-grown fig.

The dry figs, packed in hempen bags of a capacity of 2¼ hundred weight, are conveyed to Smyrna by rail and carried to the fig market, where packers and export merchants get their supply. The fruit intended to be put up for export trade is carried to the packing establishment, where it is sorted into different qualities. It is then handed to workmen, who press it between their thumb and forefinger to soften and flatten it, and pack it in rows into small, shallow, wooden boxes or small drums. Packers in manipulating figs keep their hands wet with sea water, as it is claimed that brine hastens the sugaring of the fruit. Occasionally laurel leaves are placed between the rows of figs in order to improve their flavor and keep them free from moths. Figs of inferior quality are packed in wicker baskets or small hempen bags.

In the transportation of fruits of all kinds from the plantations to Smyrna, or to the stations on the lines of railway leading to Smyrna, camels are employed to good advantage, the highways not being in a condition to permit of the use of carts or drags.

Table showing the monthly rainfall in the city of Smyrna, in inches and hundredths of inches, during the nineteen years ending with 1882.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly total.
1864	3.59	1.53	.58	3.75	1.59	.80	2.40	.50	3.30	3.51	6.80	1.49	29.84
1865	7.07	9.06	4.43	1.42	.23	.34	.10	.....	....	1.27	2.67	.10	26.69
1866	1.40	1.78	1.79	.20	.95	.63	.13	.06	.39	.08	3.84	3.91	15.16
1867	2.63	3.14	1.16	.37	1.37	.67	.....	.....	.....	1.54	5.76	7.08	23.72
1868	8.30	.32	11.24	.92	.83	.67	.27	.07	.52	1.30	4.92	.84	30.20
1869	3.21	.74	12.07	1.78	.19	.59	.04	.....	.08	1.81	3.46	.80	24.77
1870	5.79	2.81	2.29	2.24	.07	.....	.....	.47	3.95	4.45	.18	6.73	28.98
1871	11.10	1.19	1.29	.66	1.09	.39	.....	.....	.07	1.36	7.04	4.58	28.77
1872	3.17	1.46	.50	4.18	3.09	.60	.....	.....	2.82	.....	3.65	4.76	24.23
1873	2.41	5.64	2.08	.50	2.38	.16	.....	.....	.....	2.50	2.92	2.62	21.21
1874	.14	5.82	1.92	.40	.15	.....	.....	.....	.02	.30	10.31	8.99	28.05
1875	4.58	9.48	5.78	1.36	.....	.....	.....	.....	.15	2.87	4.86	3.96	33.04
1876	2.88	1.45	2.53	3.12	.42	1.76	.54	.....	.08	.94	5.75	8.48	27.95
1877	3.08	2.92	4.84	1.11	3.47	.94	.11	.36	.61	4.00	6.09	5.98	33.51
1878	6.27	2.10	3.00	4.97	.29	.13	.40	.63	1.22	.....	.44	8.50	27.95
1879	4.28	2.69	1.61	.35	2.36	.01	.....	.....	1.38	2.71	4.06	1.81	21.26
1880	1.61	.30	2.87	1.69	2.69	.18	.04	.....	1.32	.60	4.09	2.49	17.88
1881	6.15	3.92	1.74	.80	1.45	.....	.10	.....	.....	5.47	.15	4.72	24.50
1882	1.27	1.17	1.04	3.45	.65	.09	.....	.....	.....	1.02	7.89	4.56	21.25
Average	4.15	3.03	3.30	1.75	1.22	.42	.22	.11	.84	1.88	4.47	4.34	25.73

W. E. STEVENS,
Consul.

UNITED STATES CONSULATE,
Smyrna, February 28, 1884.

FRUIT CULTURE IN THE ISLAND OF MITYLENE.

REPORT BY CONSULAR AGENT FOTTION.

I have the honor to forward, herewith, a report on the cultivation of olives, oranges, lemons, raisins, and figs in the island of Mitylene, in compliance with the circular of the Department dated December 4, 1883.

OLIVES AND OLIVE TREES.

Climate.—The olive trees do not thrive in the open air below 43° latitude, where the temperature is not lower than 5° to 7° Réaumur under 0. The annual rainfall in Mitylene is about 25 inches.

Soil.—The earth here is fertile, as is proved by the luxuriant vegetation, but the olive trees thrive very well in every soil, and good results are obtained on valley, hillside, or table-land, except where the soil is marshy.

Propagation.—Olive trees may be propagated—

1. By the plantation of branches.
2. By the plantation of pieces of root.
3. By the cultivation of wild olive trees and transplantation in the field.
4. From seed.

The third system, viz, by the cultivation of wild olive trees and transplantation in the field, is in use here, because this system yields very good results, and the trees fructify very quickly.

Grafting of wild olive trees.—In the forests of Mitylene are found large quantities of wild olive trees. These trees as soon as sufficiently developed are grafted on the cultivated olive trees. The different kinds of olive trees grown here are the Adramitianes, Kollovés, Lattioeles, Karoeles, and Francoelies. The grafting should be performed in fine and temperate weather, from the commencement of April to the end of May.

Transplanting.—As soon as the young trees acquire a certain development (but in any case at the end of two years after the grafting), the transplanting has to be commenced as follows:

1. Make the holes during December, in order that the earth be exposed in air two months.
2. The planting time is from February to the end of March.
3. The trees are placed at a distance of 25 feet from each other, and to the depth of 4 feet.
4. Manure must be mixed with the earth extracted from the holes.
5. When the planting is finished, it should be immediately irrigated, and the irrigation should be repeated every two weeks, for three years, during the months of April, May, June, July, and August, conformably as the weather may be more or less dry.

These plantations come into full bearing the fifteenth year, but begin to give fruit the fourth year, and they remain fruitful for three hundred or four hundred years.

Cultivation of olive trees.—The olive orchards are plowed in the spring to the depth of 25 millimeters in the clear spaces, but to the depth of only 2 or 3 inches in the vicinity of the trees; but always after the plowing they dig the soil round the trees with a spade.

Manures.—The olive trees are manured every three years. All kinds of manures are good for the olive trees except human excrement. They use manure at the end of August, but in a large manner, about one bag of 100 kilograms for great trees, and 50 kilograms for medium trees. These manures are buried in the soil at a depth of from 25 to 30 centimeters round the trees, and remain buried until the spring, when cultivation begins.

Pruning.—At Mitylene the olive trees are pruned every year, after the harvest, with great attention; the dead and high branches are cut off. The olive trees need not be higher than 6 meters.

Harvest.—The harvest begins about the end of October, and generally ends about the end of November. The best time for pickling green olives is the end of September, always after the first rain. The Mitylenotes put the green olives for five or six days in fresh water, and they change the water every day, after which the olives are placed in vases in pickle. The best time for pickling ripe olives is the end of October.

The queen olives are not grown in Mitylene, but the ropades olives are much superior to the queen olives. This variety is grown from the tree Lattioele, and these trees do not exist in any other part of the world. The ropades olives are in great demand everywhere, because they are sweet and delicious, and can be eaten fresh before pickling. The process of preparing ropades for table use is the common manner in pickle. This variety of ropades olives costs 1 franc per kilogram.

Extracting olive oil.—The process for extracting oil is either by steam-mill or horse-mill, as follows:

After the olives become pulverized by friction in millstones, the pulp is put into bags made of hair, and then pressed either in iron or wood presses. The oil extracted from the first pressure is called *Oleum virgineum*, and costs 3½ francs per gallon. This oil is very much better than the oils of Italy. Afterwards hot water is poured many times into the bags, which are pressed until the oil is completely extracted.

Yield.—The average yield per acre per annum of mature trees is $25 to $30.

The yield in fruit per acre per annum is about 30 Turkish kilograms, or 4 quarters. And the yield in oil per acre per annum is thirty layinia (*mesure de Metelin*), or 76 gallons. Three gallons of olives give one gallon of oil.

Cost.—The cost of cultivation per acre per annum is $2.50 to $3.

Disease.—The only disease from which the olive trees suffer is cold. The cold of the year 1850 injured very much the olive trees at Mitylene; the temperature at that time was lower than 12° below 0 Réaumur.

Olive-oil trade.—The amount of olive oil exported from Mitylene per annum here is about 1,750,000 to 2,000,000 gallons, and the total yield of the island per annum is about 2,500,000 gallons, or $935,000. The countries to which the oil is exported are Turkey, France, England, Russia, and Roumania.

CULTIVATION OF VINEYARDS IN MITYLENE.

Vineyards are cultivated at Mitylene in valley, table-land, and hill-side, inland and on the sea-coast. They are cultivated very near the sea-coast because here there are no sea fogs. The custom of pruning in the best-conducted vineyards is at the end of January or during the first half of February.. All the large vines are pruned on two stems, but middle-sized and small ones on a single stem, preserving one eye more. In March the first work is done on the vine, when the first dig-

ging is done. In April they sulphate the vine, and in May give the first nipping to all branches which grow very rapidly. In June they repeat the sulphur. In July and August the heat does not permit any work on the vines. The harvest begins about the first half of September, and usually about the end of October the second digging is finished. At the close of autumn and in the winter, manure is used for old vines, but in very moderate quantities, about 4 pounds per vine in best soils and 7 pounds per vine in medium, and 10 to 12 pounds per vine in poor soils. They are manured every three years. The character of soil where best results are obtained is on a shallow dry soil, receiving the sun's rays, on hillside, valley, or table-land. The vines here come into full bearing the fourth year, and they remain fruitful until the fifteenth year.

No system of artificial irrigation for raisin culture exists here.

The yield value per acre per annum is about $68, and the cost of crop per acre is about $1. The different kinds of vines grown are: In districts of Kallonie red grapes and white grapes, from which are made the celebrated Kallonie wines, anciently *Anthosmias*. In the districts of Ploumari black grapes, from which are made the celebrated Kountoura wines, very much better than the Bordeaux. All the wines made at Mitylene are for home consumption; the export is insignificant.

ORANGE AND LEMON CULTURE.

Every variety of orange and lemon tree is grown here, but the most valuable are the Parakila orange trees, so called from the village Parakila, and the Kan orange trees, so called from their blood-red color. The Parakila trees are large, and produce very large fruit, while the Kan orange trees are not large, but their fruit is very sweet. The trees come into full bearing the fourth year, and they remain fruitful about fifty years, according to the climate and cultivation. The orange and lemon trees here are budded or grafted. The trees are not troubled with injurious insect pests or fungus growth, but sometimes are injured by the cold, when the temperature is lower than 0° Réaumur. The trees are placed at a distance of about 6 meters from each other if the soil be rich, and at only 5 meters if it be middling. Orchards are found in every place, but they yield best results on the sea-coast. The orchards are found very near to the sea-coast. No system of artificial irrigation is in use here. They prune here at the end of March, with very great attention, and they give to the tree regular, elegant, and graceful forms. As soon as the pruning is finished the working of the soil is commenced, and they dig the soil with a spade to the depth of 25 to 30 millimeters in the clear spots, but only 2 or 3 inches deep in the vicinity of the trees. Later, two or three baskets of manure are distributed around each tree, and at the end of May the ground is irrigated once in every week or two weeks, according to the season, the position, and quality of the ground in summer. Irrigation is suspended during the autumn and winter. At the end of November manure of human excrement is largely employed every two years. These manures are buried in the soil at a depth of from 25 to 30 centimeters round the trees, and remain buried and exposed to the rain until the end of March, when cultivation begins. The yield proceeds per acre per annum in the best orange orchards is about $80, and the cultivation costs per acre per annum $15. The principal portion of the orange and lemon product is for home consumption; the export is insignificant.

FIGS.

The kinds of trees producing the figs of commerce here are the Politika and the Asprokoukouzza; so called Politika from Constantinople, and Asprokoukouzza from their white seeds. The yield per acre per annum is about $100. This variety of fig tree does not require any cultivation. The process of drying and curing figs here is very simple. They dry the figs in the sun, and afterwards fill the figs with almonds, pepper, and cinnamon, and roast them in ovens in plates, to which are also added aromatic leaves of laurel. They are afterwards packed in boxes. The export of figs is insignificant.

M. M. FOTTION,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Mytilene, March 12, 1883.

FRUIT CULTURE IN SYRIA.

BEIRUT.

REPORT BY CONSUL ROBESON.

In the district of Beirut, vineyards are mostly planted on high table-lands or hillsides (where the best results are obtained), at an elevation of from 1,000 to 4,000 feet above the level of the sea. Some years ago a disease something like mildew spread in Syria, and destroyed most of the vineyards. Asphalt was used to counteract the same; but little, if any, benefit was gained by its use. The only remedy was to destroy the affected vines, and plant in their place plants taken from healthy vines. In January and February vines are pruned; two or three strong shoots are left on each vine.

The soil best adapted to the cultivation of the vine is reddish-black in color; however, grapes are raised in all kinds of soil, but when the vines have not the advantage of rich soil, they require to be carefully cultivated. Hillside and table-lands are preferred for the planting of vines for raisins. Vineyards are plowed three times a year: 1st, in December; 2d, after the pruning of the vine stocks; and 3d, a short time after the appearance of the leaves.

The vines come into full bearing in six or seven years; they remain fruitful fifty or sixty years if properly cared for. In regard to the irrigation there is no system of artificial irrigation in practice for raisin culture throughout this country. It is considered that the watering of vines, by increasing the juice, diminishes the sweetness of grapes, and they become, in consequence, unfit for raisins. The yield per acre per annum is estimated at from 2,000 to 3,000 pounds, the average value of which is from $15 to $25; the cost of cultivation amounts to about $5.50.

ORANGES AND LEMONS.

There are three kinds of oranges grown in this country: 1st, sour oranges; 2d, sweet oranges; and 3d, Mandarins. The last are the most valuable. These trees are mature in the seventh year, and remain fruitful forty or fifty years. The sour oranges are raised from seedling, while all the other kinds of oranges grow better by grafting. Two

kinds of lemons are cultivated near Beirut—the sweet and sour lemons. The best results are obtained from sour lemons when they are grafted on sweet-lemon trees, as the size of the fruit increases with the age of the tree. Lately a sort of fungus has appeared on these trees, and in some places small snails attacked them, but as yet no effectual remedy has been found to prevent or cure the same. The orange and lemon trees are planted about 20 feet apart. It is said that they grow best on the sea-coast. Low sheltered places are, however, to be preferred, as much exposure to the winds proves injurious. Dark or sandy soil suits such trees much better than light. Goats' manure is preferable to any other.

Orange and lemon trees require to be watered during the dry season. The first irrigation is effected in June when the leaves of the trees begin to curl up from the dry heat. The ground of the orange and lemon orchards is cultivated three times a year when the soil is thoroughly dry.

The annual yield of fruit per acre in the best orange orchards is about 30,000 oranges, the average price of which may be estimated at from $130 to $140. The yield and price of lemons are nearly the same. The lemon trees last twenty-five years, while the orange trees, like olives, last for an indefinite period of time. The cost of plowing, irrigating, and manuring per acre may be set down between $15 and $18 per annum. The seeds of oranges and lemons are first sown in a small tract of land. After a year they are removed and replanted in a larger piece, and at the end of the second year they are again transplanted into groves.

FIGS.

There are two kinds of fig trees in Syria: 1st, those with dark-red skin and pulp; 2d, those with greenish peel and white pulp. The latter kind is the one exported. The Syrian figs are far inferior to those produced in Smyrna. The value of the annual yield per acre is from $45 to $55. There are two ways of planting these trees: 1st, by using seeds; 2d, by cutting a branch from a fig tree, which is then buried in a deep hole in the ground with a small sprig left above the surface. As soon as the branch takes new roots, it shoots forth leaves and gradually becomes a tree.

Figs are generally cured in this country by being opened and spread for three days on dry ground or a straw mat placed on the house-tops in the sun. When dry they are placed in palm-leaf bags and pressed as much as possible. Figs must not be gathered until they are fully ripe and sweet.

OLIVES.

There are two varieties of olives cultivated in this district called, 1st, the smuc-mucky; 2d, the soury (Tyrian). The fruits of the first variety are poor and small, while the soury are of a larger size, thicker flesh, and richer sap. The best results are obtained during the twentieth or thirtieth year after the wild olive tree has been grafted. There are two methods adopted in the cultivation of olives in this district. The first is to transplant the wild olive shoots from their native soil into the olive groves and to graft them on the fourth year with grafts taken from a cultivated tree. Although this method of cultivation does not procure early crops, yet it is preferable to the second method in use, which is to graft the wild tree as soon as it is transplanted, because the former proves more productive.

The land where olive trees are planted must be plowed four or five times a year. Generally in this district where the soil is sandy a stone bench about 15 inches high is erected around the trunk of each olive tree and filled with clay to keep the soil near the tree somewhat cool and damp. The queen olives of commerce are unknown in this country. However, the olives exported from this port to Egypt and other places are selected from the Soury variety. Olive trees come into full bearing five or six years after they are grafted, and remain fruitful for a great number of years. The average yield per acre of mature trees is about 200 Turkish bushels (8,250 pounds). Five gallons of olives produce one gallon of oil. Olive trees are commonly planted 30 feet apart. Olives intended for pickling are gathered about the end of November, then lightly bruised, and after being spread on mats to dry in the air for a few days, they are placed in earthen or glass vases with a sufficient quantity of salt in them to pickle.

Olives for oil are picked as they ripen until the end of December. The best results are obtained on table-land protected from high winds. The soil best adapted to the cultivation of olive trees is a reddish porous land or dark-brown rich soil. There is not any system of artificial irrigation in use for olive culture. Olive trees are never watered. In regard to the yield and proceeds they are as stated above. The cost of cultivation per acre per annum may be set down at $10.50, not including the Government taxes. The nearest olive orchards to the coast are situated at about 1 mile from the sea-side, and extend from that distance to places 2,000 feet above the level of the sea. However, those planted in the high mountains, where cold is intense and snow falls annually do not succeed as elsewhere.

The average annual rainfall in this district is 38 inches, but the necessary rain for the growing of olives is 30 inches, which is quite enough. Olive trees in this country bear good crops only every other year.

JOHN T. ROBESON,
Consul.

UNITED STATES CONSULATE,
Beirut, May 3, 1884.

ALEPPO.

REPORT BY CONSULAR AGENT POCHE.

In reply to the circular which you did me the honor to address me under date of February 12, I make it my duty to bring to your notice that oranges and lemons are not cultivated in Aleppo owing to the severely cold weather here in winter, which is so injurious to these trees.

OLIVES.

Four varieties are cultivated in this district:

(1.) *Khul-khali*, which is only used for pickles or preserved in vinegar. This variety, which is the best for eating, is included in the category of ordinary olives. It is sweetened by being immersed in spring water, in which 11 to 12 American pounds of natural soda have been saturated, with 3 pounds of lime for about 150 pounds of olives. This immersion is made when the water, mixed with these matters, has become cold. The olive berries, after being deposited in that water, should be removed

without interruption, and they lose their bitterness in from sixteen to twenty-four hours. This result being obtained, the olives are immediately placed into another tub of well or spring water, which must be occasionally renewed till the taste of the lime is removed. After this operation, the olives are placed in pure, fresh water, sufficient to cover them, and the tub is then covered with a lid. They are then left twenty-four hours, after which they are pickled, and thus the operation is completed. Olives can also be sweetened by being bruised and placed in pure water, which is repeatedly changed till the fruit loses all its bitterness. When thus prepared, the olives are generally eaten in salad or in stew.

(2.) *Shami.*—This variety is only gathered when the fruit has become of a dark color and thoroughly ripe. When pressed till quite dry the olives are salted and preserved to be eaten with salad.

(3.) *Zeiti.*

(4.) *Huzromi Nizibli.*

These two varieties, although smaller than the two others, are used for oil, which is obtained by means of a lever or screw press, and they are gathered when the fruit has become reddish and ripe. The sweet oil is obtained by a cold extraction. The olives after being crushed in a mill are placed in bags and put under press. The lamp-oil and that used for the manufacturing of soap is obtained by the hot system, that is to say, after the first pressure the bags containing the olives are submerged in boiling water and pressed out again. The best oil is obtained from olives before they are fully ripe. A shumbul, equal to about 147 to 150 pounds, gives 12 to 14 pounds of oil in the vicinity of Aleppo, while here this quantity is reduced to one-half.

Cultivation.—The olive tree is reproduced by burying a piece of root, having many slips, in a rut one yard deep. When these slips shoot forth one of them is cared for without irrigation, while the others are destroyed. At the end of ten years this tree begins to give fruit in small quantities, but when it reaches its fourteenth year it gives every other year from 35 to 38 American pounds. The soil best suited for the growing of these trees is the reddish or light-yellow one; the latter is, however, preferable. The plantation is made without irrigation or manure; a space of about 20 feet is left between each tree; the soil is plowed two or three times a year. The ground around the tree should also be dug and turned over, and the root, as well as a part of the trunk, covered with earth in the form of a mound. The tree, however, should be regularly pruned of the dry twigs every year.

FIGS.

The fig tree is generally cultivated in the same land as the olive tree. It is planted by slips three-fourths of a yard long, and although not irrigated, it begins at the end of three years to bear fruit, which can be estimated, on an average, at 10 to 15 pounds. This tree reaches its full growth in the seventh year, and then produces from 150 to 170 pounds of fresh fruit. After that age the fig tree gradually decays. It may, however, be reproduced if cut from its root, but it is preferable to plant new slips. After being gathered, figs are spread on mats in the shade until they get dry, and are then placed in bags and pressed. The best are selected, and when dry are steamed to make them fresh, after which they are pressed between the fingers and flattened, and strung on flaxen threads to be exposed for sale.

RAISINS.

In the vicinity of Aleppo very few vines recently planted are found. As a large majority of the inhabitants of this country are Mohammedans, they are prohibited by their religion from using any alcoholic drinks, and the manufacturing of wines being constantly forbidden to them, the vine is only planted for its fruit, and the cultivation of the same is very poor. The care taken of the vine consists of pruning and the frequent plowing of the soil. Vines are indifferently planted on the declivity of the hills or table-lands, in reddish soil, both near to and far from the sea. The slopes exposed to the wind are preferable. No consideration has been given to the disease of the vine, for want of competent persons to examine the same, although the vine disease has raged in some parts of this country. The vine begins to produce in the third year; in the sixth it comes into full bearing, at which time it yields about 20 to 30 pounds of grapes. It lasts for a great number of years. When the stem is opened up it is cut and the root shoots anew, and the vine produces again after three years. No system of artificial irrigation is adopted. The fruit is either used fresh or dried. The planting is made at the same distance as the olives, *i. e.*, about 20 feet between each plant. Raisins are cured, just like figs, by being dried in the shade and then steamed.

F. POCHE,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Aleppo, April 16, 1884.

DAMASCUS.

REPORT BY CONSULAR AGENT MESHAKA.

I have the honor to acknowledge the receipt of Department circular of December 4 of the past year, received through the consul at Beirut, on the 13th instant, about the cultivation of specified fruits within this district.

In compliance with the instructions therein contained, I beg to state that raisins are cultivated for home consumption and for export to Europe. Olives and oil are also for home consumption, but a small part of the latter is yearly exported to Mecca. Figs are only for the use of this country.

It is not possible to give the yearly average quantities of these articles, no records being kept of the same by farmers or merchants, and the custom-house being on the sea-coast; but I here below proceed to reply consecutively so the questions therein specified, as far as it has been practicable to me.

RAISINS.

Vines are planted inland, in valley, table, or hillside lands, at a distance of 6 feet between each other; unless the soil is stony the distance will be according to the discretion of the cultivator, but between a line of vines and another is 9 feet.

How near to the sea-coast are the nearest vineyards?

From 36 to 75 miles.

This is an inland district, but a mist is injurious to grapes and apt to

cause mildew. In this case half of the leaves are picked off. A worm is also injurious, and is counteracted by anointing in March the trunk of vines with a solution made of bitumen and olive oil.

Pruning is performed in March by cutting the growth of the previous year, leaving only the sound branches with seven to eight buds in each. Others believe that the proper time for pruning is November, when the water is not flowing in the vine, and when the buds sprout all branches not having blossoms are cut down. The former way is more general.

I am unable to describe the different kinds of soil, but all lands are fit.

The lands planted to vines are cultivated by plowing the lands twice and thrice—in December, March, and sometimes at the end of blossoms. In the neighborhood of Damascus, where vineyards are irrigated, they are cultivated by spade digging.

The vines come into bearing on the seventh year, and remain fruitful for sixty years. Then the vine is cut a little above the surface of the soil and it rebears as before.

No system of irrigation prevails.

The yield of crop per acre per annum is about $5.50, and the cost of cultivation is $1.60.

Oranges and lemons are not specially cultivated.

OLIVES.

There are four kinds of olive trees, viz, "Dan," "Sufsafi," "Jelut," and "Masaabee." The first one gives the best result. They all come into full bearing at twenty years of age.

They are cultivated by plowing the land in December and March.

What age do the trees come into full bearing, and how long do they remain fruitful?

At twenty years, as before mentioned. Upwards of one hundred years.

Thirty-four trees in an acre.

What is the yield in fruit per acre, and how many gallons of olives are required to produce one gallon of oil?

One hundred "mods," which I believe are equal to 400 gallons. Five gallons of "Dan" olives produce one gallon of oil, and of the "Sufsafi" three-fourths of a gallon. The two other kinds do not yield oil.

How far apart, in orchards, are the trees?

Seventeen feet.

When are olives intended for pickling picked—ripe or green?

The "Dan," "Sufsafi," and "Julut" olives are picked ripe in December, and the "Masaabee" green in October.

The "Dan," "Sufsafi," and "Julut" olives are pressed in baskets several days; then washed; when thus dried a little, salted and put in oil for table use.

The "Masaabee" olives are prepared in the following manner: Bring half a pound of alkali and a quarter of a pound of lime, dissolve both in water, and put in 5¾ pounds of this green olive for a period of five to seven days, with a little shaking during the day until the bitterness disappears. Then take them out, wash them, and put them, in a salted water for table use.

What is the process of preparing olives for table use, and what is the process of extracting oil?

The process for extracting oil is as follows: "Dan" or "Sufsafi" olives are placed in a warm place about four days, then smashed by a heavy stone roller, and put in baskets under pressure by side of a vat

until the juice flows into it. There the oil is gathered from the surface of the water.

Are best results obtained on valley, hillside, or table land?

Table-land.

Is there any system of artificial irrigation in use for olive culture?

None.

How near to the coast are the olive orchards?

Forty-five to 75 miles.

Give the yield, proceeds, and cost of cultivation per acre per annum.

The yield is $36 and the cost of cultivation per acre per annum is $10, but olive trees bear fruit only every other year.

What is the annual rainfall in inches in your district?

There is no rain-gauge in this district, but it is believed that the annual rainfall is 30 inches.

FIGS.

Kind of trees producing the figs of commerce?

Unknown.

Yield per acre and process of cultivation?

Are cultivated twice by plowing the lands in the same way as the vines, and the proceeds are the same.

Process of drying and curing the fig?

Dried in the sun, then cured by covering them with flour.

NASIF MESHAKA,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Damascus, February 23, 1884.

HAIFA.

REPORT BY CONSULAR AGENT SCHUMACHER.

GRAPE CULTURE.

Raisins are not produced in my consular district; but as we have been engaged in the culture of grapes for the past ten years, and this question being closely related to the question upon raisins, I want to answer it at the same time.

Experience has shown that southern hill-slopes and table-land are equally well adapted for grape culture, whilst in valleys and on plains no very good results have been obtained. Directly on the sea-coast grape vines do not prosper near as well as in the interior.

The vineyards of the American-German colony here are situated about a half mile from the sea-shore; the close proximity of the sea (we never have fogs), however, appears to act injuriously to the vines, as we have but very little dew, which further inland falls abundantly, and which causes the vines to remain fresher during the rather hot and rainless summer months. In the mountainous district of "Belâd Bishâra" (Galilee), at an altitude of 1,500 to 3,000 feet above sea, the saccharine contents of grapes is greater both in quality and quantity, so that wine made from them has a finer flavor; the acidity contained in the grapes cultivated in the vineyards near the sea-shore, and which makes wine made from them unfit for exportation, is almost entirely absent in the grapes from Galilee. Besides this, our vines suffer from mildew.

This is a flour-like substance which surrounds the berries of the grape when they are about half grown, preventing them from developing and ripening. Every locality of our vineyards, whether in a valley or on a hillside, has suffered with this mildew, but the higher elevated the vineyards are the less they suffer.

As a remedy we were advised to strew the grapes, shortly after blossoming, with powdered sulphur, but it did not prove to be very efficient with any of the foreign or native varieties. The Isabella (a blue grape originally imported from the United States) was the least affected of all, and in some spots did not suffer at all. Experiments will have to be made yet whether we cannot find a variety which is not subjected to this malady.

According to information from natives their vineyards in the interior have at times also been affected with mildew, but it disappeared after it had lasted seven years, whilst we on the sea-coast have had to contend with it for nearly ten years. But we find on the slope of Mount Carmel where our vineyards are located, ancient wine-presses and cisterns cut in the solid rock, which shows that grape culture must have flourished here formerly. From experience thus far I can make the assertion that for this region grape culture does better in the interior than on the sea-coast.

Pruning.—The vines are pruned in the months of December, January, and February. The first-grown shoots are cut off so that only 4 or 5 buds remain on them. A reddish humus soil with limestone beneath appears to be especially well adapted for vines. The ground is worked twice with the hoe, the first time after pruning, and then again when the first leaves come out. The vines come into full bearing after 4 or 5 years, and remain fruitful until they are at least 50 years old. No vineyards are irrigated here, and if practiced would tend to diminish the saccharine qualities of the grapes. The yield is from 400 to 800 gallons per acre per annum.

ORANGES AND LEMONS.

Only one variety of oranges is cultivated in my district, and is named after the city of Acca, "Accawy." It has the form of the round Spanish orange, with reddish-yellowish flesh; it has a fine flavor, and is very juicy. Blood oranges and mandarines are cultivated so little here that there is no rule for their treatment. The orange of my district is about 3½ inches in diameter; the skin is smooth, thin, and contains considerable oil.

Several sizes of lemons grow here; the largest is about 4½ inches long by 3 inches in diameter. The skin of the lemon is thick and contains much oil. At the age of 4 to 5 years both orange and lemon trees begin bearing and remain fruitful thirty to forty years.

We have two kinds of lemons, sweet and sour; the sour bear as seedlings; on the sweet the orange is grafted. This manipulation of grafting on sweet-lemon trees has lately proved to be the most profitable, as the size of the fruit increases with the age of the tree, while those grafted on sour-lemon trees become smaller after 15 years. The trees are not troubled with injurious insects, pests, or fungous growth; want of irrigation checks the growth of the trees.

Orchard trees are planted 10 to 12 feet apart in each direction. Both orange and lemon trees are planted as shrubs in such a manner that several stems come out of the ground together, although there are some orchards where the trees have but one stem; those, however, planted as bushes protect the fruit better against the influence of the wind. The

orchards are planted, as a custom, along the sea-coast, where they yield most abundantly on level land; inland orchards never do so well. As the orchards require a sandy soil, they are planted as near as one-fourth of a mile up to some miles distance from the sea-shore. Every orange or lemon orchard is cultivated by a system of artificial irrigation, irrigated twice or three times a week (in the evening part of the day). The ground in orchards between trees is cultivated twice a year—in the fall before the rain appears and in spring when the rainy season is over. The value of the yield of an acre per annum of best orchards amounts to from $80 to $100; the cost of cultivation amounts to about $10. The returns would be much larger if the orange were exported to Europe; the above statements therefore relate only to home consumption.

OLIVES.

Olives are cultivated on a large scale in my district, the variety differing but very little. The tree commences bearing at the age of ten years, and best yield is obtained after twenty years, as the olive tree grows very slowly. We have trees in our vicinity which still are fruitful and may have an age of 200 to 500 years. In answer to the question, "How long do they remain fruitful?" I may state that the olives planted in the Garden of Gethsemane at the time of Christ still bear.

The "queen olive of commerce" is not cultivated here, but on the Greek islands.

The average yield per acre of mature trees is $105. The yield in fruit per acre is 200 bushels. Five gallons of olives are required to produce one gallon of oil. The trees are planted 20 to 25 feet apart in orchards.

Olives are mostly pickled green in my district; for extracting best table oil they are picked before they are fully ripe, but not before they are full grown and the juice begins to be oily. The process of pickling is very simple. The best and most perfect olives are picked from the tree and then placed twenty-four hours in fresh water; then taken out and put in a tub containing salt brine of about the same strength as for pickling cucumbers. A loose-fitting lid is placed in the tub with a weight on it heavy enough to keep the olives submerged in the brine; in three or four weeks the olives will be fit for table use. Before serving them, they must be washed in fresh water.

For making table oil the olives are carefully picked before they are fully ripe, and crushed while fresh in a mill and then pressed, and the oil placed in stone jars for settling.

The best localities for olive groves are between hills, where the trees are protected from strong winds; they prosper equally well whether on hillside or valley; care must, however, be taken *not* to plant the trees in wet land, as the fruit will then contain mostly water and very little oil.

Heavy dark soil is best adapted for olive trees.

No irrigation is needed after the trees are four or five years old.

In my district they are planted within half a mile from the sea-shore, and from that distance throughout the interior country. The trees need but little attention; the ground is cultivated in the spring and again in the fall.

The annual average rainfall in my district is about 18 inches.

FIGS.

The fig of commerce is produced at Smyrna and its vicinity, but very little here in Palestine. Our fig is a common, small fruit, entirely

consumed in the country. Therefore the process of drying and curing the fig in my district is not to be held as measure for the process observed towards the Smyrna fig.

The natives here pick the figs when they are entirely ripe; that is, when the skin begins to shrink; they spread them over a flat piece of loosened ground and expose them to the sun. After two or three days they are turned over and dried on the bottom side until the juice is absorbed. Thus dried they are put in bags or large baskets and are pressed between stones until they become flat and glossy; they are then brought to the inland markets.

JACOB SCHUMACHER,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Haifa, February 29, 1884.

SIDON.

REPORT BY CONSULAR AGENT ABELA.

RAISINS.

Position.—Vineyards are placed in this section of the country mostly on the high mountains or on high lands, from 2,000 feet in elevation to 5,000 feet above the sea-level. A southern exposure is preferable to any other. Vineyards on the mountains away from the sea give somewhat better crops than those near. The vines are not injured by clouds or mists; fogs are very rare in this climate, and seem to do no harm. Vines grow within two miles of the shore, but do not give the best results. About thirty years ago all the vineyards of this land were blasted by mildew, and the only effectual remedy was to dig up the old vines and plant new ones from stock untouched by the mildew.

Pruning.—Before the vines put forth leaves they are very closely pruned, all shoots being cut off, with the exception of two or three left quite short.

Soil.—The nature of the soil makes little difference. Red, loose soil is preferred. Stony, rocky soil produces the best grapes.

Cultivation.—In the best vineyards nothing else is planted in the soil, nor is manure usually applied. The ground is plowed three times a year, which in this land is merely scratching the surface, the object being to pulverize the soil.

Bearing.—Vines begin to bear fruit about the fourth year. Good crops are raised by the seventh, but the fruitfulness increases to the fifteenth year.

Irrigation.—No system of irrigation is practiced anywhere, but is considered very injurious to the crop.

Yield.—This, of course, varies from year to year, and according to the soil, &c.; but on the average may be estimated at about 1,500 pounds to 2,000 pounds the acre.

ORANGES AND LEMONS.

Varieties.—Oranges are distinguished by their shape and contour. *Belady*, round, flat ends, very thick peel, hardy; ripens late. *Shamouty*, long like an egg, thin-skinned; ripens early. *Bisry*, finest flavor; a seed-

ling. All these except the last are grafted upon the wild or bitter orange, and in two or three years after grafting begin to bear fruit. No limit is recognized to the period of fruit-bearing, but the trees attain a very old age without deteriorating. Only one variety grows directly from the seed; the others are all grafted, which is considered a better method than budding.

Soil.—The order of the soils best adapted to orange culture is as follows: the best being light red earth, then dark loam, then sandy, and finally clayey.

Pests.—Until the past year nothing had troubled the trees except the attacks of moles on the roots of the trees. But now a fungus has appeared, which is spreading rapidly, and seems likely to do great damage. No remedy for it has been discovered as yet.

Position.—All the oranges and lemons of Syria are grown very near the sea-coast, whether at Tripoli, Sidon, or Jaffa; and I know of no extensive successful cultivation more than four miles from the sea, and some of the orchards are within 20 rods of salt water. When the trees are set out they are placed 18 feet apart every way when the soil is good, 16 feet when the soil is only average; trees placed behind a shelter, as another line of trees, prosper better than those exposed to severe wind.

Irrigation.—As there is no rain from May 1 till October 1, irrigation is the only means of keeping the trees alive. Each tree is surrounded by a little bank of earth to keep the water about the tree. The trees are left without irrigation till the last of June, till the leaves curl a little, then they are watered three times for periods of seven days, and after this every fifteen days. The irrigation of the river coming from Mount Lebanon is better than that from the wells, as the last has a taste of brackishness.

Yield.—In good orchards it is estimated that the average yield is from 1,500 oranges to 2,000 per tree, and in poor orchards about 600 per tree. The yield is annual, but every other year the crop is lighter.

OLIVES.

Varieties.—*Smuc muky*, small berry, little meat, but full of oil. *Belady*, larger and more meat, and is the best variety.

Cultivation.—Wild olive shoots are planted and then grafted, after which the only care they receive is an occasional plowing, except that the earth is often banked about the trunk to the depth of 10 inches. The young trees are set out at a distance of 20 feet apart. No irrigation whatever allowed.

Bearing.—After being planted and grafted the trees soon begin to bear berries, but the growth is very slow and the increase in the amount of fruit very gradual.

Oil.—As nearly as can be estimated the average yield per acre is about 40 bushels of berries for mature trees. As the liquid measure of this land is based on the weight of the articles measured, it is customary to estimate that a bushel of berries will produce about 12 pounds of oil; but the relation of the yield of berries to the amount of oil is a very varying one, differing according to the season and the rude methods used for extracting oil. After the olive has been crushed or bruised the pulp is treated either by being put into water and the oil is skimmed from the top, or else the pulp is pressed under a lever with weights at the end or by a screw-press. All these appliances are of the most clumsy pattern. Two methods are used in preparing olives

for table food, according as green or black olives are required. For green olives the fruit is picked before ripening, and only those berries are selected which are wholly free from any bruises. The fruit is placed in salt and water, and takes some time in curing. The black, ripe berry is very soon prepared for the table by being artificially crushed and then cured with salt.

Location.—The olive tree is very hardy, and thrives both near the coast and in the mountains, where it is found at an elevation of 3,000 feet, but the weight of snow does great damage by breaking down the little branches. The best soil is the red porous soil of the hills and stony, rocky ground. The annual rainfall of this land is about 32 inches. As most of this falls in half the year, the olive thrives best when planted on slopes where the rain soon drains off.

FIGS.

Fig trees are of two main varieties: the red pulp, which is the best for eating when the fruit is green, and the white pulp, which is the kind used for commerce. No choice variety of fig is raised here to produce such dried figs as those sent from Smyrna, but a very inferior fig, sent only to Egypt, if exported at all, worth when dried about 2 cents per pound. The figs when picked are opened by hand and laid on a smooth surface of land to dry in the sun. After a few days they are gathered up and packed in great cakes.

White clayey soil is considered the best for this fruit, and the only cultivation is some plowing once a year under the trees.

SHIBLY ABELA,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Sidon, February 21, 1884.

TARSUS.

REPORT BY ACTING CONSULAR AGENT AVANIA.

RAISINS.

The best sites for the culture of vineyards are the hillside lands, the table-lands, and in general all light soils. The interior of the country is better suited than the coast. In this province there are but very few vineyards in the vicinity of the sea. The largest part is at a distance of from 9 to 12 miles and upward. At Mersine there are some vineyards at a distance of from one-half to 3 miles, the produce of which is middling. Mildew and fogs not being very frequent all along the province, vineyards never suffer from the same; consequently no specific is used. Sulphur, however, is the only remedy used, as in Anatolia. In this country, and I think in all the Levant, vineyards are never irrigated; the winter and spring rains are sufficient. The best results are obtained where the soil is a light reddish and more or less sandy. Vineyards are cultivated twice a year, because if they are kept free from parasites, and in condition to absorb the necessary water, they yield better and last longer. In Adana, a vineyard country, people sow even cotton and sesame in the vines without prejudice to the same. After the third year of their plantation the vines come into full bearing

and begin to give fruit, which increases gradually. They remain fruitful till their fortieth year. However, vines last fifty or sixty years, and give relative fruit if they are regularly cultivated and pruned annually. The pruning of vineyards commences about the end of January. The pruned branches, when sound, are used for the plantation of new vineyards.

There is not any system of artificial irrigation in this province. The rains that fall are sufficient to revive the plants.

The yield, value, and cost of vineyards per acre (of 40 square acres) are, in this country, as follows: In every acre from 150 to 160 vine-stocks are planted, which yield on a average from 13 to 17 pounds of grapes each; value from $50 or $60 per acre. In this country, where the wages of workmen are rather low, the keeping of vineyards costs but little.

The greatest part of the grapes produced are absorbed by the local consumption either in their fresh condition or for distillation. Nevertheless since France began to ask for foreign grapes, a quantity of about 3,300,000 pounds of raisins at a value of $66,000 is annually exported from this province. The raisins destined for exportation are dried up in the sun, placed in bags, and sent to the sea-ports to be shipped in steamers.

ORANGES AND LEMONS.

There are four kinds of trees more or less productive: The sour lemons, the sweet lemons, the sour oranges, and the sweet oranges. The most yielding of these trees are the sweet lemons, but the most valuable are the sour lemon and the sweet orange fruits, the usual value of which is from 1 to 3 cents each. These trees come generally to their full bearing after the fifth year of their plantation, which is first effected in seeds and replanted the next year at a distance of from 13 to 16 feet between each plant. By grafting, these four kinds of trees can be transformed into one, which succeeds perfectly well. Sour lemons and sweet oranges are most sensitive to a cold temperature, especially the former, which are sometimes completely ruined by cold. Thus the duration of these trees depends on temperature, and might be prolonged to thirty or forty years. In this country such trees are never troubled with any injurious insects, &c.; severe temperature is the only thing that injures them. The orange and lemon groves are generally situated in the interior or on the coast, but always in the vicinity of towns in order to be sheltered from cold. The plain lands are rather suitable for the plantation and conservation of these trees; but the best results are obtained on the coast, where the soil is more or less sandy and light. Even at a distance of a quarter of a mile from the sea these trees prosper quite well. The system of irrigation used in this country is the running water. In those places where such water is lacking wells are dug, the water of which is used for watering the gardens by means of wheels mounted with buckets. In the places where the soil of the groves is cultivated, watering is necessary in summer and autumn when rains are late, and this is done repeatedly.

It is commonly calculated that the average yield of these trees is worth from $2.50 to $3 each. In this country no exportation of oranges or lemons is made; on the contrary, large importation is effected annually from the coast of Syria for the local consumption.

OLIVES.

The olive tree is not cultivated in this province. There are many wild olive forests in the mountains, but they remain in their primitive condi-

tion for want of inhabitants to improve them. The peasant of this district directs his special attention to the cultivation of cereals, cotton, &c.

FIGS.

The fig tree is also not cultivated in this province. There are some trees, however, in the gardens, but they are neglected and of inferior quality. That kind of tree does not succeed in the plains nor in the gardens that are frequently watered. A large quantity of figs are imported from the coast of Syria and Smyrna for the consumption of this place.

ELIE AVANIA,
Acting Consular Agent.

UNITED STATES CONSULAR AGENCY,
Tarsus and Mersine, March 3, 1884.

TRIPOLI.

REPORT BY ACTING CONSULAR AGENT YANNI.

RAISINS.

1. Vineyards are found in all parts of this district, but especially in the hedges surrounding the orchards of the large village Elminyeh, about 6 miles northeast of Tripoli, on the hillsides of the Dunniyeh district, in the elevated valleys of the Lebanon, and on the table-lands of Elkoura and El-Zawiyeh districts.

2. The above-mentioned village, Elminyeh, is very close to the sea.

3. Nothing is known concerning injury caused by sea fogs or mist. The only injury to the vines occurred in the district of Dunniyeh, about thirty years ago. This district is some 9 miles from the sea, and before the time mentioned was famous for its excellent grapes. Some disease of an unknown character reduced these grapes to a very poor condition, so that the vines were almost destroyed. It is only within the last ten years that the vines of Dunniyeh have begun to revive.

4. In February and March, after the heavy rains are over and the sun's rays begin to animate vegetation, people begin pruning the vines by cutting off all the branches of the last year, so as to give place for others. All kinds of vines are not pruned, for there are some sorts which need no such treatment except in case of dead branches only, which are cut off.

5. Vineyards are planted in all soils, but the best results are obtained from those of siliceous character.

6. The lands planted to vines are cultivated four or five times a year, and if neglected the product is correspondingly small.

7. Vines begin to bear in their third year, but do not come to maturity before the fifth year. They remain fruitful as long as they are properly attended, except when they are planted among olive trees, which, when grown, kill not only vines but other trees. Vines in such situation rarely live more than fifteen years.

8. There is no need of irrigation for the vineyards of this region; and in consequence vines are planted where no irrigation takes place.

9. The estimated average yield from each vine is 5 to 10 pounds of grapes, worth from 4 to 8 cents for the whole product. The expenses are about 7 per cent. of the income.

ORANGES AND LEMONS.

1. Oranges, lemons, citrons, bitter oranges, and mandarines are grown in Tripoli.

2. Lemons, oranges, and citrons are the most valuable.

3. Bearing begins in the tenth year and comes into fullness between this and the fiftieth year. The duration of life is not known, but the general observation is that they do not live to a great age, especially if neglected.

4. The trees are either seedlings, grafted, or cuttings.

5. No injury from insects or from fungous growth has ever been known, and no measures are used to protect the trees from them.

6. The space between the trees varies from 7 to 15 feet.

7. Orchards are found on the low plains and sheltered valleys near the coast.

8. The best results are obtained from trees planted in alluvial soil mixed with sand.

9. Some orchards are near the sea-shore, but the best producing trees are those protected from the sea and other winds.

10. The orchards are irrigated by means of canals running into them, which give an abundant supply of water when wanted.

11. The ground between the trees is cultivated from five to seven times per year.

12. The yield of one acre of land well cared for is from $150 to $250, but the expenses are not less than 30 per cent., for the culture of these trees requires a great deal of manuring and much labor.

OLIVES.

1. All the olives of this district are of one kind, known as the *Olea vulgaris*.

2. Olive trees are planted in two ways. The first is transplanting, the ground is prepared by digging large trenches three or more feet deep in which old domesticated or wild olive trees are planted. The land is plowed four or five times a year. The wild olive is grafted in the fourth year after transplanting. This method delays the crop, but is more successful than that employed in Lattakia, where the wild olive is grafted at the time of its transplanting, in order to hasten the crop. The loss in death of the trees is very heavy in consequence. The second method, which is good and less expensive, is to plant the shoots or suckers grown on the trunks of old trees. In most of the new plantations the mulberry is planted at the same time and place with the olive shoot. The mulberry grows rapidly, supports the olive plant, and gives good crops of leaves for the culture of silk till the olive tree, which is of slow growth, begins to bear fruit, by which time the mulberry dies. These young olive trees require constant care to hasten their growth. Neglect in cultivating does not seem to greatly affect the product of old trees. To keep olive trees in good condition they require either fertilizers or a change of earth about the roots of the trees. The latter method is usually employed.

3. I am unable to give any information concerning the queen olives of commerce, since this sort is not found in the districts around Tripoli.

4. Transplanted trees come into full bearing after their tenth year, while plantations of shoots do not attain their maturity before their twentieth year. As to the age these trees can live, it is not known, but it is estimated that the groves around Tripoli are of great antiquity.

5. If we suppose an acre of land to contain fifty mature trees, well

cared for, they will yield about 1,800 pounds of olives, worth about $25; the cost of cultivation should not exceed $2.

6. If the olives are of good quality, 1,800 pounds will yield from 500 to 550 pounds of oil.

7. In the old plantations no rule is observed, but in the new ones a space of 30 or 40 feet is left between the trees.

8. Olives are gathered green for pickling.

9. Olives are gathered for their oil when ripe, and the longer they remain on the tree the greater the amount of oil.

10. Olives are prepared for the table in two ways: The first is to break the fruit by a slight blow of a hammer, after which it is abundantly sprinkled with salt, in which it remains two or three days, when it is put in pickle. This method gives a speedy result. The second method is to take chosen green olives and put them in pickle. This pickle is tested by the people as follows: an egg is put into it and the brine is strengthened till the egg floats. Olives prepared in this way remain sound and good for a long time. They even preserve their green color for three or four years.

11. As to the manner of extracting the oil the people employ one of three methods:

(*a.*) The presses or maassirs. In the middle of a large room is a circular stone about 5 feet in diameter, with a large hollow in the top. Within this hollow a millstone is made to revolve on its edge by means of a shaft and an upright post. The millstone is driven round and round, either by men or horse-power, crushing the olives into a pulpy mass. The press consists of the trunk of a tree, which has been hollowed out by a mortise some 5 or 6 feet long. This log stands upright over a large jar or cistern. The olive pulp is put into small hay baskets, which are piled in the hollow log, and over the top of them passes a long, heavy bar, which presses down upon these baskets, the pressure being increased by heavy weights suspended at the end of the bar. The oil descends into the vessel below, which is partially filled with water, and the workmen use their hands for dipping the oil from the surface of the water.

(*b.*) These mills are the same as those for grinding wheat. The only respect in which they differ from the preceding process is the using of revolving knives, which cut the pulp from the olive seed instead of crushing the entire berry.

(*c.*) In the northern districts of Lafita and Akkar the people employ a ruder method for pressing the crushed olives. They put the pulp into vessels of water and press it with their hands, and finally skim the oil from the surface with their hands.

12. The best soil for the olive tree is the alluvial. In limestone and chalky soils the trees grow more rapidly, and become strong, but are less fruitful. The quantity of oil yielded by their berries is much less than the average product of others.

13. Olive trees are not irrigated.

14. At Kalmun the orchards are very near the sea, with a northwestern exposure.

15. Though we have no meteorological observatory in Tripoli, still we consider the rainfall in the city a little more than that of Beirut, say about 40 to 42 inches per annum.

FIGS.

1. Both the ordinary figs and the sycamore or Indian figs are found.

2. Neither crop is large enough to be worthy of estimation; the yield

per acre is about $80 net. The ground planted with figs is cultivated four or five times a year.

3. Figs are gathered when ripe, and after breaking the fruit a little at the top they are exposed to the sun till they become dry, after which they are boiled together with some fragrant herbs and stored for the winter.

G YANNI,
Acting Consular Agent.

UNITED STATES CONSULAR AGENCY,
Tripoli, March 18, 1884.

FRUIT-GROWING IN THE STRAITS SETTLEMENTS.

REPORT BY CONSUL-GENERAL STUDER, OF SINGAPORE.

I have the honor to acknowledge the receipt of Department Circular dated December 4, last, containing, at the request of some leading fruit-growers of California, several interrogatories prepared with a view of receiving answers thereto from consular officers in whose districts the fruits specified are specially cultivated; the information desired being chiefly intended for the prosecution of fruit culture in the United States, &c.

I note that information, as per interrogatories, is desired upon the cultivation and treatment of the following fruits: raisins, oranges, lemons, olives, and figs.

In reply, I have to say that none of the said fruits, species of oranges and limes (not lemons) excepted, are grown or exist anywhere within my consular district or in adjacent countries; nor, in fact, to the best of my knowledge and belief, in the entire Indo-Malayan Archipelago. This is an extreme tropical climate, and the fruits named (any fruits, I may say, of a semi-tropical climate), with rare exceptions (in high altitudes), as far as I have been able to ascertain, do not grow anywhere in the tropical belt, nor would fruits indigenous here grow or thrive (artificial cultivation in hot-houses excepted) in those parts of the globe where the above-named fruits grow readily. Even if soil suitable to the growth of the fruits could be found, I am sure that the constant great moisture in the atmosphere, never ending and little changing heat, and the rather frequent rains, so heavy at times, would go against the cultivation thereof.

An able scientific fruit-grower will readily understand and appreciate the said preventive causes. I may safely say that the average heat in the sun at noontime, per year, is about 148° Fahr., and in the shade, the average per annum, also, and for all times, day and night, is about 86° Fahr. The difference in degrees between sun and shade trees approximately indicates the moisture in the atmosphere. A glance at the map will show any one that the peninsula of Malacca and the entire Malayan Archipelago lies between the Indian and Pacific Oceans, and that to this fact, and a tropical sun added, the existence of great moisture in the atmosphere and frequent rain-squalls must be attributed.

The said fruits, in the countries where successfully grown, have long spells of hot, dry weather, with a more or less dry atmosphere, a dew-fall more or less heavy, a soil suitable to their cultivation, and, above all a winter, and with it a resting and a recuperating spell; though I admit that the orange (not the lemon) and, in a measure, the fig need

this somewhat less than the olive and the grape. In the countries around and near the Mediterranean where the said fruits (generally claimed) attain the greatest perfection in point of taste and flavor, the summers are very long, hot, and dry; they have a short, mild winter, with more or less snow, or, where no snow, light frosts, and heavy rainfalls everywhere. The vines and trees lose their foliage, get rest, and recuperate, and leaf out again when spring sets in. Of such changes we know nothing here, practically speaking; vegetation, to all appearances, has no rest. Trees, shrubs, and vines, while slowly and steadily (at various times of the year for each species) losing their leaves, receive fresh leaves nearly at the same time. While the old leaves are slowly and gradually falling, the buds of the fresh leaves appear at the same time, and by the time all of the old leaves have fallen the new leaves have obtained full, or nearly full, size, and soon after follow the blossoms, and the fruits or seeds follow. It is the "land of the sun," of eternal summer, and nature knows no rest.

Now, during my long residence here, at all times taking a lively interest in agriculture, horticulture, botany—the flora of the country generally—soils, and phenomena of nature, I have long ago made inquiries concerning these and other fruits, as to whether they could be grown with any degree of success, and received very interesting accounts of attempts made at different times by different parties and in different localities, with the following results:

Grape-vines.—The most indefatigable in endeavors to introduce the grape-vine have been the missionaries of the Roman Catholic missions at Malacca, Penang, and Singapore; also, some Armenians and several Europeans (not of the clergy). Sight should not be lost of the fact that Malacca (after Goa, the first, most ancient European colony and mission in Southern Asia) was conquered by the Portuguese, under Albuquerque, in 1520 (about), and that the cross was planted immediately after the sword had done its work. The mission developed the country adjacent thereto. It is said that priests of the mission made repeated attempts to cultivate grape-vines, and tried in many ways to make it a success, but always failed, and every one that tried it after them. That the vine will grow, and even luxuriantly, this there is no doubt, but it will not produce fruit. In this respect I heard of different results (the vines introduced came from Spain, France, and Italy), about as follows: In some instances the vines grew well, and plenty of blossoms appeared, and produced some grapes, but the berries were much smaller than in the country the vine came from; the vine continued to grow vigorously, producing plenty of blossoms, but *no fruit* (the blossoms died and fell off), and cutting back the vines to produce new branches did not help the matter. To let the vine grow on and take care of itself produced no better result—plenty of leaves and blossoms and no fruit, and in some instances, where not well sheltered against the withering blasts of the southwest monsoon,* it would die altogether. In some instances vines would not produce any fruit at all, and only blossoms to wither and fall. Again, in instances, vines after leafing out nicely would die suddenly, owing to the inroads of white ants, the pest and plague of this country, on the roots. All endeavors to raise grapes

* The southwest monsoon (from April till October) has a most withering and destructive effect on plants not indigenous if not thoroughly well sheltered against its hot, vigorous, steady blasts, most felt during May, June, and July. The leaves of a plant, no matter how vigorous, commence to wither on the edges; gradually they turn black, and fall off, the small branches first, and the entire plant follows in due course of time. Near the coast this is more severely felt than a few miles from it.

hereabouts having ended in dead failures, no one, while there are many anxious to introduce the seeds and plants of other countries for trial, and cultivation if a success, thinks of renewing the attempt of planting grapevines.

There are several indigenous trees here producing various fruits resembling the grape (especially the white grape) in taste; some of them containing more or less sugar or subacid than others, and having an almost translucent, whitish pulp, only thicker and fleshier than that of the grape, resembling in that respect the wild grapes met with in the forests of our Southern States, such as the fox, scuppernong, and muscatel grapes. And as to the skins, there are two species, the fruits of which are covered with skins resembling those of our wild species above named, only thicker and of different color, but of rougher (velvety) surface, which can easily be removed (this from any of the vinous fruits) without breaking the pulp, leaving the latter bare and whole. But the pulp of none of these vinous fruits resembles the pulp of any grape, in this respect, that it is formed in partitions divided by thin skins (like the flesh of an orange), and each partition contains a seed entirely unlike the kernel of the grape.

There is one species, the "Rambee," a very handsome tree, densely covered with handsome, long, and large-leafed foliage, growing to enormous size, more to volume than height; the fruits grow in long clusters (suspended grape-shape, like a loosely-packed grape bunch). It is to all appearances a grape, only that it grows from a tree instead of from a vine. And in the shape of a grape they are brought to market, the branches being from 10 to 14 inches in length. The fruit when fully matured is of about ¾-inch diameter, average, and covered with a tough parchment-like skin (color and thickness), which has to be pulled off to eat the fruit; but the translucent pulp of whitish amber color is divided into radiating partitions, as above described, and its seeds are not kernels. It is a very pleasant, juicy, refreshing, and wholesome fruit, and, while it is sweet, it has more subacid than any other vinous fruit I know of, resembling in that respect the white grape of Germany or Switzerland. It grows very plentifully in and out of the jungle, but does best in shady, sheltered places.

Next comes the "Duccu," which thrives well only in the jungle or dense orchards away from the sea-coast (very plentiful on the Malay peninsula and in Sumatra). It resembles the Rambee in taste and flavor and in the color of the pulp, only that it is more amber-colored and of larger size (like a small peach, round, and resembles it), and its skin is a trifle thicker and of a deeper yellow color (light buff). It has a short stem and grows close to the wood. Of all vinous fruits, the Mangosteen excepted, it finds the most favor among all classes of population.

The "Poulazan."—The tree bearing this fruit differs from the Rambee in this, that its leaves are smaller (though of similar shape—lance form), branches fewer, thinner, and more drooping, the foliage much lighter. The fruit is oval-shaped, about the size of a pullet's egg; its skin, of dark reddish-brown color, is harder and thicker than that of the Duccu and Rambee, and rough, almost hirsute, on the outside (like the cup of an acorn, only rougher—rasp-like). It is very sweet and juicy, with hardly any subacid; the translucent pulp of light amber color, but it does not keep long, not over 48 hours after being taken ripe from the tree (the Duccu and Rambee keep good for a few days if left lying loose in an open airy place). It is not as plentiful in the mar-

ket as the former two, simply because it does not keep long, and can be supplied only from orchards within a few miles of the market.

The "Ramboutan."—Its tree and foliage resemble that of the Rambee greatly (a fine tree it is). This fruit is of oval shape and about as large as the Poulazan, and grows in large clusters from the points of branches (but not as the Rambee, in grape shape); its skin is hirsute, like a chestnut, only the barbs are soft and bend back without pricking on being touched; the skin is thin, parchment-like, and very soft; and in color, one species (there are two) which is most common, a cross between crimson and brown, with golden greenish subtint; and the other species is of a golden greenish color (the delicate yellow preponderating). With the exception of the color of the skins, I have never been able to discover any difference between the two, though some people claim more sweetness for the last-mentioned species. The color of the pulp is of pale amber, and in taste it resembles the Rambee, being a little sweeter than the latter and less fleshy in pulp—juicier. It does not keep long, only about three days, if well kept; but is a great favorite among all classes of people; very plenty, cheap, and wholesome.

The "Mangosteen"* I have so often mentioned and described in some of my reports that I may be pardoned if I allude to it briefly only. It resembles the above-mentioned indigenous fruits only in this respect, that it is juicy and vinous, with little subacid. Its pulp is not translucent, but of a whitish milky color, with a bluish-gray subtint. The fruit is also subdivided into partitions radiating from the center (axis), but without dividing skins; some divisions contain seeds, some do not. The skin (or shell—the English call it skin) is thick (about one-quarter inch), tough and hard like tough, half-dried bark, and contains much tannin. Of indigenous fruits, the Mangosteen stands at the head of the list (generally admitted). It is exceedingly wholesome, juicy, and refreshing, and of most exceptional flavor (it is, in fact, grape, apple, pear, peach, or strawberry—a strange combination of taste more than flavors), and if given to people lying in fever, it has a very soothing and reviving tendency. During my long residence here, I never yet heard of any one getting ill in consequence of indulging unusually in Mangosteens, or even feeling unpleasant effects. This fruit can be kept much longer, too, than any of the above-named fruits, say *about* twelve days, if kept loose in an open, dry, and airy place.

None of the said indigenous fruits will, so I have been repeatedly informed by competent authorities, grow in other tropical countries outside of this their indigenous country; not even to advantage in Ceylon, where I was once shown some dwarfish Mangosteens, the result of a careful attempt. In a preserved state (in a manner similar or same as our American canned fruits), it seemed to me they lost much of taste and flavor, though fair representatives still.

OLIVES.

I have never seen an olive tree, big or little, in this colony, nor ever any one that planted one. Some years ago, long before I came here, attempts to grow it were made, but although some seedlings lived for a while, proved unsuccessful, from climatic causes, I think, chiefly, and the destruction of the roots by white ants.

* For description of, see report by Consul Studer, No. 10, page 244, entitled "The tannic qualities of the shell of the Mangosteen."

FIGS.

About the same remarks hold good concerning this fruit, though in some instances parties planting fig trees on trial succeeded in obtaining a few fruits, whereafter the trees died, killed by white ants.

LEMONS.

Many attempts to grow this fruit have been made from seeds, and also seedlings and young trees in tubs imported in passing steamers from Italy direct. They grew generally for a while, but invariably died, either from the damaging effects of the southwestern monsoon, or the inroads of white ants (the latter especially.) In lieu of the usual lemon, known to us in the United States, we have here the "citronella lime," a small fruit (a trifle over an inch in diameter) of pale-green color, very acid. This grows well, without much care, almost everywhere in the Indo-Malayan Archipelago and in India also; it is very plenty and cheap. This tree has the advantage of not only yielding its (for the tropics) so valuable fruit (valuable not only for cookery and lemonade, but many medicinal purposes), but the strongly citronella-charged leaf, out of which citronella essential oil (also out of lemon grass) can be extracted; forming, as it does, a very important article of export. This tree, I think, would live in Southern California under irrigation; also in the mildest places of Florida and Louisiana (wherever no frost occurs). But my idea is, that wherever lemons can be grown successfully, I should plant the lime tree, if it would grow readily, more on account of the leaves than the fruits, for the distillation of citronella oil. But whether the tree would change there owing to differences in climate, soil, &c., I cannot say; it would have to be tried.

ORANGES.

Straits oranges.—Oranges grow here, but are utterly unlike those produced in America or Europe. Here the orange is of a deep green color, of the size of an average apple; not very thick-skinned, the skin peeling off readily; it is juicy, but very sour (bad for one's teeth), and the rind, when broken, emits a strong peculiar odor, partly orange and citronella. There are two kinds; the one just mentioned being the most common. The other kind is the same as to color and size, but is slightly pear-shaped, has a thicker skin than the former; but as regards the taste, it is sweet (I should call it an insipid sweet), with hardly any sub-acid. This kind is not so often met with in the market.

The cultivation of the orange is not at all extensive, and met with here and there in fruit orchards, the trees planted closely together. I have been told that they don't live very long. They bear pretty well until they are about eight years old, then they decline gradually and die off; or, being no longer remunerative, are taken up.

The seed of a European or any foreign orange will produce precisely the same fruit as first mentioned. Grafting is rarely resorted to and understood by very few native gardeners, and of oculation they know nothing at all (I never found any one that did). Of grafting they know only a primitive way. Where we use grafting-wax for the protection of freshly inserted scions they use potter's clay, and clasp the branch with a bamboo split in two halves and tied up with a string until the two halves meet each other, forming a tube; and, I must say, it generally answers the purpose. The second species of orange above named, the

pear-shaped, is produced by grafting scions of the first mentioned or seedlings of any orange on "Pomelo" trees (what the "Pomelo" or "Pampelmus" is I will mention below), and the latter being a hardy indigenous tree, which no orange really is, they do pretty well and obtain the pear-shape (the Pomelo fruit is also but slightly pear-shaped), and bear pretty well and longer than the green orange, only somewhat less.

Either kind sells for less, owing to inferiority, than imported oranges, chiefly from Southern China and at times from Siam. In addition to the inferior qualities of the local oranges, they do not keep long—only a few days. What they are most convenient for is to supply the market when there are no arrivals of foreign oranges, which occurs for short periods during certain times of the year. It must, therefore, become apparent that the introduction of Singapore or Malacca oranges would prove of no benefit whatever to our American fruit-growers; but even if the contrary were believed to be the case, the strong probability is that in a different soil and climate the fruit would turn out wholly different—worse it could not well be.

A Chinese gentleman here has an orchard, from small trees brought here from near Canton, in good order and bearing. The fruit is entirely different from that grown where the trees came from, and different from any orange I have ever seen. It is a little larger than the "Coolie orange," but rounder; it is of a strictly golden-russet color; the skin adheres to the flesh like that of the "sucking orange" above mentioned, and it is very juicy and as sweet as sugar, without the perceptibility of subacid. This proves conclusively the difference produced by change of climate and soil, even of a transplanted tree. The seed of this orange, in turn, if planted here, would produce the dark green sour orange above alluded to.

The Pomelo, or Pampelmus, is, I have been often informed, an indigenous fruit of Indo-China, the Malay peninsula, and most islands of the Indo-Malayan Archipelago, and resembles in appearance, color, size, and form excepted, an orange. Its form is slightly pear-shaped from the middle downwards to the stem; it is of large size, average of about five inches diameter; its color is a pale green; its skin is thick (about one-third of an inch in thickness), but peels off quite readily, and is of a slightly warty and punctured appearance like an orange. The skin removed, the flesh is covered over all with a white, thin, slightly transparent, but tough, skin, and presents, thus covered, a very fine delicate color—a fleshy or roseate pink, looking like satin (smooth and glossy). As in an orange, the flesh lies in partitions, radiating from the center, and each partition is distinctly covered with the same white tough skin, which comes off with ease; this removed, the juice, or rather, thin juicy pulp, is found in globules about the size of a pea, but of oblong shape, becoming smaller near the upper and lower ends, closely packed, with the seeds lying flat, closely ranged, with points looking towards the center, lying above the globules immediately under the white skin. One, in eating this fruit, can thus, with a little care, the juice globules being each distinctly covered with a very thin filmy skin, break off and eat without soiling the hands. It is vinous, of sweet taste with pleasant subacid, and has not a particle of orange flavor; it is a very refreshing and wholesome fruit; also, very plenty and cheap. The color of the juice globules (all depending on where they have been grown) is from light to dark amber color with a reddish subtint; those coming from Java being the darkest colored (almost light claret) and considered the best, and those from Siam the

next best (size and quality). Those grown hereabouts are a trifle smaller, and are regarded as inferior; in which, however, when well matured and of fair size, I never agreed. They are hardy, bear for many years, and are a great blessing. I believe that seedlings or scions of European oranges (and perhaps lemons) could be grafted on them with success and to advantage, as one gentleman at Labuan, Borneo, as to oranges, proved some years ago, obtaining larger oranges (of pale yellow color) of excellent taste and flavor, than I have ever seen anywhere, only they did not keep long.

China oranges.—The quantity of oranges consumed in the ports of this colony (shore and ships) is enormous, because they are very plenty and cheap. By far the largest portion comes from China; and of Chinese oranges I have noted, essentially, three kinds. All of them have the true orange color (perhaps a trifle darker red), and resemble more or less the Italian orange, only that they are all smaller. The first, and by far the best, is known as the "Swatow orange" (some call it the "Mandarin orange"), and it keeps good for a long time, and it is the largest of the Chinese oranges (about 2 inches diameter). Its skin is not very thick, comes off easily, and the fruit is juicy, sweet, with light subacid, and of excellent flavor, taste resembling the Sicilian orange more than any other kind. Two kinds are known as the "Hong-Kong orange" (grown in different parts of Southern China and marketed at Hong-Kong). One of these is called the "sucking orange," because the skin cannot be peeled off, adhering as it does close to the flesh; in flavor and taste it differs little from the Swatow orange—a trifle sourer. The other is known as the "Coolie orange." It is small, like an average-sized tomato, and resembles the latter in form (somewhat flat or indented above and below); it peels easily, but has a thick skin, and, while it is juicy and refreshing, it has a rather strong subacid. They are *very* cheap, and come in large quantities about New Year's time.

Siam oranges.—When the Siamese oranges are in season (from early August till December) large quantities come here, and are much liked. Its average size is a little over 1½ inches diameter; in color it resembles a lemon rather than an orange (a paler yellow green); its skin is thinner than that of any orange known to me, and peels off with great ease; it is very juicy and fairly sweet (a trifle insipid), with hardly any subacid. They don't keep in good order as long as any of the Chineseo ranges, but answer well for the supply of neighboring ports. This is my idea of the "Siam orange," exported from Bangkok.

The Chinese and Siamese oranges are so plenty and cheap here that no one, somehow, troubles himself to any extent with experimenting in oranges (and lemons are looked upon as an impossibility).

A. G. STUDER,
Consul.

UNITED STATES CONSULATE,
Singapore, April 15, 1884.

FRUIT-GROWING IN THE STRAITS SETTLEMENTS.

REPORT BY CONSULAR AGENT HEIM, OF PENANG.

In obedience to the request expressed by the Department of State, in circular, dated December, 1883, to prepare a report on the fruit industry and trade as conducted in this consular district, with special

reference to raisins, oranges, lemons, olives, and figs, I have the honor to submit the following information:

Raisins, olives, and figs are not grown at all in this district; our climate is exceedingly tropical, and although the soil is very rich, these fruits do not prosper, owing to the great dampness with which our atmosphere is always saturated, not to speak of the destructive work of the many insects, especially the white ant, which attack almost all indigenous plants, and destroy not only the roots but also the stems, leaves, and fruits.

The cultivation of olives has never been tried in this district, but several attempts have been made to cultivate raisins and figs, which, however, proved an utter failure, and they are not likely to be repeated again.

We have no lemons growing here; that is to say, not the fruit which goes by this name in the United States, but we have limes in abundance; they grow to the size of about 1 inch in diameter, have a medium green color, and take the place of lemons in general use. The leaves of the lime and trees when broken and crushed have a strong smell of citronella oil, and by means of distillation a fair proportion of this oil might be produced from them. Attempts have been made to introduce the Italian lemon into this district by planting seeds, and also by importing the young plants from Italy, which vegetate for some months, but invariably die with the setting in of the southwest monsoon, if the insects had not destroyed them before.

Oranges are freely grown here. But very little attention is given to their cultivation, as they have a very sour taste, and are thus little estimated. They have a dark green color, are about 1¾ to 2 inches in diameter, and the skin has a strong citronella smell. Almost all the oranges consumed here are imported from China and Siam. These have a pleasant sweet taste, and are much liked and largely consumed by both natives and Europeans. Seeds of Siamese and Chinese oranges have frequently been planted here, and the trees grow very well, but the fruit turns out very much the same as our Straits Settlements oranges, and has the same sour taste.

An improvement on our indigenous orange trees and fruit might be produced by grafting them with imported branches; this manipulation, however, is little known by our natives, and besides people would hardly take the trouble to do it, as the imported China and Siam oranges can be got in the bazaars almost as cheap as our own sour Strait oranges.

JOS. HEIM,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Penang, March 21, 1884.

HANKOW.

Consul Shepard submits the following:

Raisins, oranges, lemons, olives, and figs are not cultivated anywhere in this consular district. Raisins of native production, and for native use only, come to this market at times in small quantities, and of poor quality, but they are grown far to the north and beyond any knowledge of foreigners as to methods of culture or care of the fruit. They reach here by the Han River, navigable for small craft hundreds of miles above its mouth.

Oranges and lemons in limited quantities are grown some hundreds of miles beyond

Hankow, and are known as Schang fruit. The oranges are larger than ordinary fruit, rather coarse grain and quite acid; they are juicy but not esteemed a valuable fruit. The lemons are round in form, with a very thick, coarse skin, spongy and rough. They yield a fair quantity of juice, one affording five tablespoonsfuls. They often measure 12 to 15 inches in circumference. I judge the skin would yield much oil. As far as I can learn, no culture is given to either, but they are allowed to grow without care wherever the seed germinates.

Neither olives nor figs of native growth are found in this locality.

FRUIT CULTURE IN THE PHILIPPINES.

REPORT BY CONSUL VOIGHT.

Native Philippine oranges are very poor, pithy, and full of seeds. There is hardly one good one among a hundred. We depend here on China for our supply of this fruit, as regards quality. The orange never attains perfection here, and always remains green and coarse, owing, perhaps, to the continual excessive heat. Lemons there are none, but there is abundance of limes, little round, dark green fruit, same as appear in the New York, &c., markets from the West Indies, and fully as good inquality, rather more pungently bitter.

As regards olives, they are entirely unknown here, no tree of that kind, nor any similar thereto, being found; probably, also on account of the everlasting and extreme heat. Nor are there any figs whatever to be met with in these islands, nor dates. All these products are brought here from China, where a more genial temperature allows them to live and thrive. In fact there is hardly any tropical fruit in perfection to be found in the Philippines, except mangoes, which are the best of their kind right here. Even bananas do not compare in quality with those which the West Indies, &c., furnish for the New York market; nor is much to be said in favor of pineapples, the real good ones likewise coming in from China. The climate here is far too fiercely hot to allow any delicate fruit its requisite development, rendering it sort of tasteless and dry. Corn, although requiring a certain amount of heat, does not grow to perfection here, but yields a hard, small kernel, very deeply colored, on only a very moderate-sized cob. Rice and sugar-cane are the staple crops.

There is absolutely no vine culture in the Philippines, no vine being able to live in this perennially torrid climate; and grapes being unknown hereabouts, except such as may come from Malaga.

JULIUS G. VOIGHT,
Consul.

UNITED STATES CONSULATE,
Manila, March 20, 1884.

CONTINENT OF AMERICA.

NORTH AMERICA.

MEXICO.

ORANGE AND LEMON CULTURE IN GUERRERO.

REPORT BY CONSUL SUTTER, OF ACAPULCO.

In compliance with Department circular, I have the honor to inclose replies to the interrogatories therein as far as lemons and oranges are concerned, neither raisins, olives, nor figs being cultivated in this district.

ORANGES AND LEMONS.

1. "What varieties of trees are grown, and which are the most valuable; at what age do they come into full bearing, and how long do they remain fruitful?"

Sweet and bitter oranges, navel oranges, lemons, limes, shaddocks, citrons.

Limes and sweet oranges are the most valuable. Some 15,000 boxes of limes, representing for the growers a value of about $25,000, are exported annually per steamers of the Pacific Mail Steamship Company to San Francisco. Brought to town, selected, and packed for export, this fruit costs, more or less, $3 per box.

Only small quantities of oranges are exported to San Francisco per steamer from December to February, before the crop from the islands in the Pacific overstocks the market.

Oranges are obtained at $5 per thousand, but on account of high rates of freight cannot compete in the San Francisco market with the fruit imported from those islands.

Lime trees, which are allowed to grow like a bush, with branches rising from the roots, commence to bear at the age of four years, and are in full bearing when eight years old; in good soil and with but very little care the tree will attain the age of fifty years. This tree is indigenous, whilst the other varieties of the citrus family are said to have been imported.

Orange trees commence to bear at the age of five years, are in full bearing at the age of ten, and will remain fruitful fully as long as the lime tree.

2. "Are the trees seedlings, grafted, or budded?"

All the trees are seedlings.

3. "Are the trees troubled with injurious insect pests or fungous growth? If so troubled, what are the means employed for preventing and curing same?"

Ants are the only insects which are injurious to the trees, much more to the orange than to the lime trees; people protect their trees in various ways from ants, with more or less success. The ants are destroyed

by digging up their nests, or are kept off the trees with fine sand, fire, water, petroleum, &c. Fungous growth and other parasites are not found in such abundance as to seriously injure the trees.

4. "How far apart are orchard trees planted?"

Most of the trees are planted very irregularly, in selected, favorable spots, which may keep moist all the year round. In a few newly laid out lime-tree plantations the distance between trees is 20 feet in every direction.

5. "Are orchards inland or on the sea-coast, hillside, valley, or upland? Where do they yield best results?"

Anywhere, mostly in moist places along small streamlets or gulches on the hillsides, in low bottoms along rivers, or near the sea-shore; in sandy black loam they yield the best results; the sweetest and thin-skinned oranges usually grow on hillsides, whilst the fruit of lowlands is generally thick-skinned.

6. "How near to the sea-shore are the orchards?"

Some orchards are in close proximity to the sea-shore, in sandy black loam, in some instances with lagoons of brackish water on the side opposite to the sea-shore, and give very excellent results. Thus situated there is one, newly, regularly planted, of 8,000 lime trees and 100 orange trees, with room for many thousands more, and with the advantage of cheap transportation by water to Acapulco, the port of shipping.

7. "Is there any system of artificial irrigation in use, and is the ground in orchards between trees cultivated? If so, how many times per year?"

No system of artificial irrigation is in use; the ground between trees is not cultivated, but merely kept free of undergrowth and weeds, land being as yet of but nominal value.

8. "Give the yield, proceeds, and cost of cultivation per acre per annum in the best orange orchards."

As the orchards are not regularly planted, and the trees are scattered here and there, without any regard to economy in land occupied, it is utterly impossible to state even only approximately the yield or cost of cultivation of an acre per annum.

One orange tr e from the age of eight years up to fifty years of age, in ordinarily good conditions, will yield on an average 3,000 oranges every year, worth, picked, $4 per thousand. A lime tree from the age of eight years to the age of fifty bears fruit all the year round, and will yield about 8,000 per year, worth on the tree, say, $10.

Land being but of nominal value, no interest on capital invested in the same or any ground rent is to be taken in account; nothing is irrigated, consequently the cost of cultivation is very little, say $150 per annum for an orchard of several hundred trees.

There being no export market for the other varieties of the citrus family, they are of comparatively little value, and only raised for home consumption.

JOHN A. SUTTER, JR.,
Consul.

UNITED STATES CONSULATE,
Acapulco, February 15, 1884.

FRUIT CULTURE IN SONORA.

REPORT BY CONSUL WILLARD, OF GUAYMAS.

I have the honor to acknowledge the receipt of Department circular' date of December 4, 1883, relative to the fruit industry in this consular district.

I beg leave to state in reply to the interrogatories contained in said circular, that oranges, lemons, olives, and figs are cultivated to a very limited extent when it is taken into consideration that the soil and climate of this consular district are so well adapted to their successful production.

Grapes.—There are no vineyards in this consular district cultivated for the production of raisins; what few vineyards exist are limited in extent from a few vines to 1 and 2 acres.

Valley and table lands, both inland and near the coast, produce grapes with good results, and those produced are used entirely for home consumption. The sea fogs and mists on the coast do not appear to injure them, or cause mildew. The best results appear to be obtained from the soil of a sandy, loamy character. As the rains in this consular district occur in the months of July, August, and September, artificial irrigation is practiced in cultivation of the small vineyards that are to be found in the State.

Grapes ripen in the months of June and July. The yield or value per acre I am unable to give. The grapes are sold readily at from 10 to 25 cents per pound in the markets of Hermosillo and Guaymas.

There is no wine produced from grapes in this consular district.

Oranges.—Oranges and limes are grown inland, and on the coast some few lemons are produced.

The orange commences bearing about the fourth year, and continues fruitful for twenty to twenty-five years, and is more productive in a heavy loamy soil.

The bottom lands of the valleys inland yield the best results. There are no orange orchards near the sea-shore. A system of artificial irrigation is used. Trees are usually planted 20 to 25 feet apart, and the ground in the orchards is sometimes planted in corn and vegetables.

As a general rule there are no insect pests or fungus growth to trouble the trees. The trees are generally grafted or budded.

The variety of orange grown in this State is known as the Sicily orange, though climate and soil have changed it somewhat, and the variety is not clearly marked.

The oranges of this consular district are known for their sweet flavor. The production in the State is somewhat in excess of the home consumption, and this year some five car-loads of oranges have been shipped from in and around the capital (Hermosillo), over the Sonora Railroad, to Arizona and New Mexico. The yield, proceeds, and cost of cultivation per acre, I am unable to give. From the best information I can obtain from those who have orange orchards, there is a large margin of profit on the crop, now that they can be transported by rail to the United States for a market.

The difficulties existing before the railroad was completed through to Arizona of getting the fruit to market limited the cultivation and production of the orange to the demand for home consumption.

The valley lands of the river Sonora, in the interior of the State, or any of the valleys south of Magdalena, will produce good results in the cultivation of the orange.

Limes.—Limes are grown with the orange. They are of the small variety, and yield an abundant crop. They are used entirely in the State for pre-serves and other purposes.

Olives.—The common olive grows in this State, but is not cultivated as an article of profit, although it is believed this fruit might be cultivated to advantage in certain portions of this district.

Figs.—The fig, like the olive, grows all over the State, but there are no large fig orchards, nor is any of the fruit dried or cured for export.

In certain parts of the peninsula of Lower California, in the consular district of La Paz, the cultivation of the olive and the fig is carried on to a considerable extent, and this consular district receives from the port of Muleje dried figs in ceroons (hide bags) and pickled olives in small casks, but neither the one nor the other can be considered a first-class article that would find favor in a foreign market. This may be owing to the primitive manner in which they are dried and prepared.

A. WILLARD,
Consul.

CONSULATE OF THE UNITED STATES,
Guaymas, February 7, 1884.

FRUIT-CULTURE IN LOWER CALIFORNIA.

REPORT BY CONSUL VIOSCA, OF LA PAZ.

Attentive to the contents of circular from the Department of State, dated December 4, 1883, I have the honor to inclose a report in answer to the interrogatories contained therein and relative to the fruit-culture specified in the said circular and fruits specially cultivated in this territory.

With the object of being able to more fully give an accurate detailed statement, and as far as practicable in this country, I beg to inform the Department that I am indebted to Mr. Henry Von Borstel, a German subject, who owns the Dolores farm, located in the municipality of La Paz, and at about 70 miles north from this city, on the Gulf side, for the information contained in this report. Mr. Von Borstel devotes his time on his farm exclusively to fruit-culture.

JAS. VIOSCA,
Consul.

UNITED STATES CONSULATE,
La Paz, Mexico, April 29, 1884.

RAISINS.

Position of vineyard.—Anywhere where the vines can be irrigated. On the Gulf side vines prosper near the sea-shore, as sea fogs and mists are unknown; on the Pacific side it is different.

General pruning custom is about two eyes.

The best soil is considered sandy loam with gravel and heavy loam with stones.

Vineyards are rarely cultivated for other purposes.

At about four or five years vines are in full bearing and remain fruitful for about twenty years.

No irrigation, no vines. Irrigation is carried on by common surface ditches.

Value, 9 to 12 cents per pound. Yield sufficient for home consumption and a little for export. Cost of crop per acre cannot be given.

So far only the Mission grape is to some extent cultivated here, about the poorest grape for raisins, but lately Malaga, Muscatel, Sultana, and other varieties proper for the purpose have been introduced.

Besides raisins are only made in places distant from ports, as the roads are rather in a primitive state.

ORANGES AND LEMONS.

Of each only one kind is known. Oranges come in bearing at about six years and give good crops from 8 to 10 years. Lemons bear in three to four years, and are in full bearing in from 6 to 8 years, and remain fruitful for more than fifty years, principally if planted in red heavy loam with small stones or gravel. Only seedlings are cultivated.

The only injurious insect is a kind of bug about an inch long, but this appears only when it rains. The fruit stung by them turns yellow and drops. As these bugs generally make their appearance about the time when the fruit is fit for market, the simple remedy is to collect the crop. The Spanish name for the bug is "chinche." A kind of woodpecker does also a good deal of damage when the fruit ripens. A good shot-gun is used for them.

The trees are planted about 20 feet apart each way.

Very near the sea-shore the heavy north winds make the flowers drop; therefore they are only cultivated inland on level ground.

The system of irrigation is the same as with grapes, and no cultivation between the trees.

Yield.—Home consumption and a good export to San Francisco, as they ripen here in season for the feast of Christmas and New Year. Price here about $8 to $10 per thousand. Cost of culture not known, but insignificant.

OLIVES.

Only one variety known here. They are propagated by cuttings only, planted at the place wanted. At about 8 years the trees give a moderate crop.

It is difficult to say how long they remain fruitful. The principal bearing trees in Loreto and Mulegé were planted by the priests, and many of them are said to be 100 to 150 years old at least. A mature tree gives about from 100 to 150 gallons olives, some even more.

No olive oil is now made here; but the olives are said to yield an excellent quality of oil.

From 20 to 30 feet apart the trees are generally planted.

For pickling, the olives are picked green, about the time that they will begin to change color—end of August and September. It is said that for oil they were picked ripe in October. For table use they are steeped for 10 to 12 days in fresh water, changed every day, and afterwards put in weak brine.

No hillside cultivation practicable here.

Soil: sandy loam, with subsoil gravel, is considered the best. Irrigation same as that employed for grapes, &c.

The nearer the coast the better the yield and the trees. In San Ignacio, Purificacion, Comondú (in the interior mountains), it is said, exist large trees, but they do not bear fruit. On my ranch, only about 2¼ miles from the sea-shore, and not over 100 to 150 feet above sea-level, were about 20 fine trees, perhaps 100 years old or more, and the whole lot did not yield one bucketful for more than five consecutive years. The same with new trees from cuttings of the old trees, planted at the same place. Only one young tree exists there now, and is at present full of flowers. The old trees were finally cut down. Since 1879 I began planting cuttings from mentioned trees, from 150 to, say, 500 yards from the beach, and had a little fruit last year, and now have about 40 trees, all in flower, more or less, and some are loaded.

At Mulegé and Loreto the price for pickled olives ready for the table is 20 cents per gallon, and are exported to La Paz, Mazatlan, and Guaymas.

Yield and cost of cultivation unknown. It is said in Mulegé there is no cultivation at all, and no irrigation except when in flower. All they do is gather the fruit.

Annual rainfall is, in the average, very small in this district. Last fall it was abundant in the mountains, not five miles from my place; meanwhile, here on the coast, we had not any, and I doubt if it amounted to 1 inch at my place.

DATES.

About this fruit I refer to "Culture of the Date, by W. G. Kee, gardener in charge of agricultural grounds, University of California. Washington: Government Print-

ing Office, 1883." All I can add to it is that the dates grown in this country are of fair quality and have great facility in curing them, if they are wanted for commerce, not always found with other varieties.

Suckers.—I should like to get some more information about planting them. In the fall of 1882 I planted about fifty and last fall more than one hundred, without any result so far. They are green about two to three months, when they begin to dry, and pulling them up the part under ground is completely rotten and as if drawn from a swamp. The ground I planted them in is alluvial sandy loam, substrata gravel, water 14 feet from surface. Soil contains a little salt. Neither can I succeed with plants of any growth, except young ones about one to two inches over ground, and these, with proper care, planted in pure sand, nearly all thrive, provided plenty water is given to them. I take fine sand from the beach.

Seeds.—It is astonishing the quantity of staminates produced by planting it; more than two-thirds, and perhaps three-quarters. Therefore it would be advantageous to know exactly how to plant suckers; what time; what size; how deep; trimmed or untrimmed; covered or exposed to sun and wind; what soil; previously soaked in water or not, &c.

FIGS.

The only kind of tree cultivated here yields the black fig of commerce.

The trees are planted about 25 to 30 feet apart each way. Besides destroying suckers and cleaning the branches, no other cultivation is known. They want plenty of water.

A kind of insect, fastening on the bark and roots, some years ago destroyed many trees. On young trees I rubbed them off with a rag moistened in coal-oil, with good effect.

The fruits that have fallen the previous day and night are gathered in the morning, picked over, and put on a kind of mats made of reed and sun-dried. It takes about four to five days to make them merchantable, provided the weather is cloudless. They generally are then put in close boxes, perhaps to sweat a little. Before packing they are spread in the sun just long enough to get warm, when they are pressed in seroons of raw-hide. Packed in wooden boxes, &c., they get worm-eaten.

GENERAL OBSERVATIONS.

Of the foregoing trees and vines, only one variety of each is cultivated here, supposed to be introduced by the first priests who came to this country.

HENRY VON BORSTEL.

FARM OF DOLORES, *April* 25, 1884.

CENTRAL AMERICA.

FRUIT TRADE OF BRITISH HONDURAS WITH THE UNITED STATES.

[Republished from Consular Reports No. 36.]

REPORT OF CONSUL MORLAN, OF BELIZE.

STEAM COMMUNICATION.

I have to report a change in the mail service between this port and New Orleans, commencing September 9.

The colony now has a mail steamer from New Orleans every ninth and twelfth day instead of every two weeks as formerly. These steamers are subsidized by the colonial government, for carrying the British mails, to the amount of $25,000 per annum. At present the line consists of two steamers—the City of Dallas, of 955 tons, and the Wanderer, of 521 tons. Both vessels carry the American flag, and are owned and operated by Messrs. Macheca Bros., commission merchants and dealers in foreign fruits and nuts, at New Orleans.

In addition to Belize, the steamers touch at Livingston (Guatemala), and Puerto Cortez and Utilla, in Honduras, making Belize their port of arrival and departure from and to the United States.

The Philadelphia line of steamers (Messrs. Warren & Merritt) have discontinued their trips to this port for the present, as there is not enough fruit grown to make it an object for them to call, and the trade between this port and Philadelphia did not offer much in the way of freight. It is expected, however, that when the fruit trade is properly developed they will resume their trips.

The New York line (Messrs. W. Jex & Co.) have been very unfortunate in their trade with this colony and Central America: first, by the loss of the steamship Pallas, wrecked on her first trip to Corn Island, and now by the wreck of the Mallard, on her fourth trip at Chinchona Banks, about fifty miles from this port. It is thought that another steamer will be immediately placed on the line, as the traffic between New York and this port will warrant it. The Mallard was the pioneer in shipping fruit from this part of the world to New York, and her loss will prove a damper for a time on the business of growing fruit in this colony, as it removes the competition that existed between the rival lines.

In addition to the steamships above mentioned, additional facilities for getting fruit to market will be furnished by means of steam communication up and down the coast and principal rivers of the colony to connect with the regular mail steamer from the United States. The colonial government invites tenders for placing a light-draught steamer of about 150 tons burden on the route above mentioned, the steamer to make at least two trips per month for mail and passenger traffic, and promises a subsidy of $5,000 per annum. This will be of great benefit to the inhabitants of the northern part of the colony, as the water is too shallow to admit of being visited by large ships, and they have thus been deprived of the advantage of shipping their produce direct. They will now be enabled to engage in fruit-growing, as well as have the means of getting their produce (sugar, rice, logwood, &c.) quickly and safely to market.

For the frequent and regular communication by steamship with the United States, and the consequent encouragement of fruit growing, the colony is indebted to his excellency Lieutenant-Governor F. P. Barlee, who did all in his power for the advancement of the colony, and who recognized the fact that its best interests were to be promoted by establishing closer commercial relations with the United States.

FRUIT EXPORTS TO THE UNITED STATES.

At the present time most of the fruit shipped to the United States by the Macheca Brothers is grown in the neighboring Republics of Honduras and Guatemala, as fruit-growing in this colony is in its infancy and the shipments at the present time are small. They are, however, increasing rapidly in size and value, as several companies, as well as private individuals, have lately engaged in growing fruit for export, and are making a great success of it. In time there is no doubt that ships will be able to get entire loads of fruit in this colony, and thus avoid the expense and time lost in going to the Spanish Main to get sufficient fruit to make up a cargo. This trade is very much needed in this colony, as the balance of trade with the United States is against it, and a large and continuous exportation of tropical fruits cannot fail to have a

beneficial effect in reducing the value of exchange and favoring the introduction of more American goods.

The United States supplies all this part of the world with provisions, and, could the fruit trade be properly built up and established, would undoubtedly supply all the most important manufactured articles.

FRUIT-GROWING IN HONDURAS.

The greater part of the fruits shipped to the United States at the present time are bananas and plantains. The banana is a very perishable fruit, and to reach the market in a proper condition must be pulled when quite green ("three-fourths full" is the term used here), as if it is allowed to ripen on the stalk, or sucker, as it is called here, they would all spoil before the ship could make the passage. It is this fact that has prevented the growing of fruit in the colony for export. The speedy and regular trips of the steamer will change all this. The plantain is a fruit resembling the banana in appearance, but much hardier and only suitable for cooking. It is shipped in considerable quantities, but the demand for them is limited to the Southern States, as comparatively few people in the North know the use of them. Here, as in all Central America, they might almost be called the bread of the country, as they are in constant use, and form a large item in food of the people. They are cooked in a variety of ways, broiled, baked, fried, and stewed, and are very nutritious. The prisoners in the jail are fed almost entirely on them, with the addition of a little salt fish, and occasionally meat soup and pilot bread, and, although they perform hard labor, actually gain flesh during their confinement. Planting of bananas and plantains is done in a very primitive manner, and consists in cutting off the bush and trees during the dry season and burning the brush; then, at the beginning of the rainy season, the suckers are planted by making a hole in the ground with a hoe or machete. After that nothing is required except to keep down the weeds and brush until the fruit is ready for the market. Each stalk produces but one bunch of fruit, and requires about nine months from time of planting to produce fruit suitable for market. The stalks are cut down to get the fruit, and fresh suckers shoot up to supply other bunches. After a certain number of years (depending on the depth and quality of the soil) the ground becomes exhausted and will not produce large bunches, and other clearings are made and new plantations, or walks, as they are commonly called, are established.

Planters who properly understand the rotation of crops place cocoanut and other long-lived trees between the rows of banana and plantain suckers, and thus, by the time the bananas and plantains have given out, the hardier plants have commenced to bear and bring a more certain and lasting revenue.

The growing of pineapples, cacao, and yams (a vegetable resembling the potato) is conducted in very much the same manner as bananas and plantains.

A great aid to the growing and shipping of perishable fruits to the United States would be the establishment of a line of telegraph along the coast, as the fruit-growers could then be informed not only of the exact time that the steamer would call for the fruit, but also of the amount of fruit needed, and avoid the loss occasioned sometimes by cutting it in too great quantities.

The worst drawback the fruit-growers have to contend with at the present time is the lack of suitable labor, most of the laborers of the colony being employed in the mahogany and logwood works or sugar

estates. However, should prices of fruits advance as competition increases, the demand might be met by importing coolie labor from Jamaica, as is done for some of the sugar estates.

Previous to the subsidizing of the line of steamers there was no market for fruit in this colony, and no persons were engaged in it except Caribs, who grew what fruit was needed for the local market.

In addition to the before-mentioned fruits there are shipped in their seasons considerable quantities of pineapples, oranges, limes, and a few alligator pears; the last named have to be shipped on ice, and command high prices in the New Orleans market.

There are a great many other varieties of fruits grown here that are too perishable to ship, and a taste for them would have to be created before it would pay to ship them on ice, as would have to be done to insure their safe arrival. The prices paid for the fruits by the buyers are much lower than they should be to properly encourage the planters, and are as follows: Bananas, 37½ to 75 cents per bunch; plantains and pineapples, 50 to 75 cents per hundred; mangoes, $3 per barrel. Brisk competition might have the effect that it has had on the price of cocoanuts, the price for them formerly being $10 to $13 per thousand, while they now bring from $20 to $30. Even at the prices named, fruit-growing seems to be profitable, as lands are very cheap. Government lands sell at $1 per acre, and large lots by private parties are even less in price.

I have no means of giving the exact amount of capital engaged in fruit-growing, nor the amount exported to the United States, but I will endeavor to learn and report at some future date, when I anticipate a large increase over the present and a trade that will give employment to a large number of ships and considerably increase the export trade of the United States to this colony.

ALBERT E. MORLAN,
Consul.

UNITED STATES CONSULATE,
Belize, October, 1, 1882.

SOUTH AMERICA.

PANAMA.

Vice-consul Turpin reports as follows:

Fruit is not cultivated in this locality, except bananas. All of the tropical fruits grow here, but they are simply planted and left to grow as nature would have them; there is no attempt made to cultivate them whatsoever.

FRUIT-GROWING IN ECUADOR.

REPORT BY CONSUL BEACH, OF GUAYAQUIL.

Notwithstanding its very restricted domain, it is probable that no country in the world possesses so great a variation of climate as Ecuador, which ranges from the temperature of perpetual snow to that of perpetual summer, neither essentially changing with the alternations

of the seasons. The ice and snow at all times cover the summits of Chimborazo and other mountains of great altitude, while in the lower sections the mercury ranges between 65° and 85°.

The soil is less varied than the climate in characteristics, though possessing several elements. The lowlands are either loam unmixed, sandy loam, or clay loam. The surface of the uplands, with scarcely an exception, is of volcanic origin—lava, scoria, porphyry, &c. As in some other part of South America—notably Venezuela—the exposed rocks are undergoing a constant decomposition, producing a soil everywhere in some degree fertile. In Ecuador even the lava has been so disintegrated as to form a soil. Those giving attention to botany understand that each of the vegetable species needs specific elements to promote germination and conduce to development. Some require elements other than a favorable soil or temperature. A portion of the vegetable kingdom matures only after passing through the extremes of heat and cold, and which would not survive under a continuous summer temperature. The cocoanut tree, as an illustration of the special requirements of many species of plants, may have a soil and temperature that are favorable, yet it must "breathe" the salt atmosphere in order to exist and thrive.

Ecuador, though having the wide range of temperature before mentioned, does not have radical changes, and therefore does not sustain all of the vegetation that would appear to have a place somewhere in the wide range of temperature noted. Yet there are few countries, if any, that can sustain a more diversified vegetation than Ecuador. In fruits it produces all that belong to the tropics, usually in great profusion and perfection; and many varieties not considered tropical, as apples, pears, peaches, and strawberries. In no respect have the productive resources of the country been fully developed, and the practices afford a poor instruction for others to follow. A description of the crudities of the practice, and possibilities of the country, may prove of interest in portraying inutilized opportunities, and *how not to do it.*

GRAPES AND RAISINS.

Until very recently no attempt has been made to grow grapes in Ecuador, except here and there vines about dwelling-houses. These have been grown on frames or poles, and with little or no attention to pruning or cultivation. Nearly all classes of grapes can be grown to perfection. Of late some attention has been given to the subject in the interior; and on mountain sides, between ranges of the Andes, at an altitude of from 6,000 to 8,000 feet (the soil decomposed lava), small vineyards have been started with very favorable results, indifferent cultivation considered. The vines are set by digging a hole with a hoe, and are cultivated only by the use of a *machete*—a long, broad-bladed knife—with which all other vegetation is cut down. The land costs little or nothing, and the laborer is paid twenty cents a day and kept. The vines are grown to stakes. As considerable wine is consumed in the country, the National Congress, now in session, to promote grape culture, has passed a law that all persons engaged in their cultivation shall be exempt from military service—a great inducement to engage in the pursuit, as the numerous revolutions have made frequent calls for soldiers, retarding all industries. The value of the grape crop per acre can be approximated by the value of wine, the most common bringing $1.25 per gallon. The yield of grapes would doubtless be as large as elsewhere under similar cultivation. It is not known that grapes may

not be grown in any section of the country. The general conditions appear to be favorable for the growth of raisin-grapes, but I cannot ascertain that the experiment of growing them has ever been tested here.

ORANGES.

1. There are three varieties of oranges grown in Ecuador, viz, thick skin and thin skin, sweet, and sour. The thin-skin variety is in most demand for domestic use. None are exported further than Peru and Chili. The trees come into bearing at from three to four years of age, and continue to bear until about twenty years old.

2. The trees are all seedlings; that is, they come up and grow naturally.

3. The fruit while ripening is occasionally afflicted with insects, evidently after the sweet juice.

4. As a rule the trees are not planted, but grow where they by chance come up. If set out in orchards the trees should be placed at least 40 feet apart, as the fruit requires much air and sunlight to mature well.

5, 6. The fruit does not produce well immediately on the sea coast, but five miles or more in the interior it does well on any kind of soil, though best on a deep, rich loam.

7. The fruit is not irrigated, and the land is not cultivated, not even by cutting down the brush and weeds with a *machete*.

8. No expense for cultivation. Trees well matured average a yield of 4,000 oranges per year, which are sold on the tree at $10, but which bring in the Guayaquil market from $3 to $4 per thousand. The home market is usually well supplied, and more luscious fruit is not elsewhere produced.

LEMONS.

1. The lemon family in Ecuador is of three sorts—large sour, limes, and sweet. The trees come into bearing at from two to three years of age, and continue to bear up to about twenty years of age.

2. The trees are all seedlings, and come up by chance.

3. Neither trees nor fruit are troubled with insects.

4. There are no orchards; but if there were, the trees to produce well, and good fruit, should be from 40 to 50 feet apart, for the same reason as given regarding oranges. The trees that come up promiscuously are often transplanted into hedges and set near together, more for the purpose of making a fence than realizing from the fruit, which is of market value.

5, 6. The trees are not detrimentally affected by sea-breezes, and they appear to thrive anywhere.

7. The trees are not cultivated or irrigated.

8. It is difficult to say what the yield would be under good treatment, but it certainly would be very large. The price of the fruit is too low to make the business of lemon growing profitable in Ecuador.

OLIVES.

There appears to be no reason for doubting that in portions of Ecuador olives might be grown in perfection, for similar conditions of climate and soil exist to that of France along the shores of the Mediterranean Sea, where the best olives in the world are produced. So far as can be ascertained, growing olives in Ecuador has never been tried.

FIGS.

1. The only kind of fig grown in Ecuador is the purple.
2. Though the fruit does well it is grown only in a small way. The trees should be subjected to treatment similar to that of the orange and lemon, in which respect the requirement is lived up to in Ecuador—all being neglected. A tree in full bearing will yield about 100 pounds of fruit.
3. None of the fruit is dried in Ecuador. All that is grown is consumed fresh or made into sweetmeats.

HORATIO N. BEACH,
Consul.

UNITED STATES CONSULATE,
Guayaquil, February 26, 1884.

FRUIT CULTURE IN VENEZUELA.

REPORT BY CONSUL BIRD, OF LA GUAYRA.

Adverting to a circular letter of date December 4, 1883, received from the Department of State, in which various inquiries are propounded in reference to raisins, oranges, lemons, olives, and figs, the following reply, based upon general knowledge and trustworthy information, is respectfully submitted.

The culture and care of fruits, as well as of almost every other product of the soil, as practiced in the United States, is almost unknown in this region, where, as in all tropical countries, many varieties of good fruits grow spontaneous from the soil, ripening at all seasons and in abundant supply. To this cause, as well as to the idle and shiftless habits of the people, who are, in this respect, far inferior to the colored people of the Southern States, may be attributed the utter indifference of the people to the culture of the fruits of commerce.

In reference to oranges and lemons it may be said that they are propagated from grafts upon seedling stocks, planted 15 feet apart, suffer little or no injury from insect pests or funguos growth, get very slight cultivation for the first five years, at which time they begin to bear moderately well, and are then almost entirely neglected. These fruits, when planted near the sea, do not yield well, especially the orange, but when planted inland yield abundant crops of very good quality. The oranges from the vicinity of Valencia, 40 miles in the interior, are considered the best, and are doubtless of as fine flavor as those grown anywhere. No system of irrigation is practiced, and, from the character of cultivation, it is impossible to state the yield, proceeds, and cost of cultivation per acre per annum.

Raisins, olives, and figs are not grown to any extent in this consular district. Here and there may be found a few trees of the latter fruit, grown more for ornament than profit, although the trees bear three or four crops of fruit per year.

With the exception of small shipments of bananas, oranges, and pineapples to the adjacent West India islands, and of cocoanuts to the United States, there are no fruit exports from Venezuela. And yet, in view of the adaptability of the soil and climate to this particular branch

of industry, it is probable that an intelligent and well-directed system of fruit culture would in no other country prove more remunerative.

W. S. BIRD,
Consul.

UNITED STATES CONSULATE,
La Guayra, February 26, 1884.

FRUIT IN MARACAIBO.

Consul Plumacher says that no raisins, oranges, lemons, olives, or figs are grown in his consular district. Oranges and lemons grow without any care being taken of them.

FRUIT IN BRITISH GUIANA.

REPORT BY CONSUL FIGYELMESY.

All the cultivation in this colony is the sugar-cane; alluvial soil for 30 miles inland from the sea is planted with sugar-cane. No orchards; the grape, orange, and fig grow to a small extent in the gardens of private residences; olives do not grow. Beyond the alluvial belt this country is not under cultivation.

FRUIT CULTURE IN PERU.

REPORT BY VICE-CONSUL LAPOINT, OF LAMBAYEQUE.

Fruit culture is carried on here in a very primitive way, and I may say that all kinds are growing almost wild. What little there is produced is consumed here, and nothing is exported. Grapes very scarce, and no wine is made. Whatever wine is consumed here is imported from other parts of the country and from Europe. Land-owners plant almost all their grounds in rice and sugar-cane, and take no interest in cultivating anything else.

WEST INDIES.

ORANGE CULTURE IN JAMAICA.

REPORT BY CONSUL HOSKINSON, OF KINGSTON.

In referece to the fruit circular, I forwarded by last mail a press copy of Dr. Neesh's lecture* on orange cultivation. The lecture has since been published in one of the city newspapers, and combines a scientific treatment of the subject with a long practical experience of the writer. Oranges have never been regularly planted out in this island as they

* This lecture is published in full in the appendix hereto.

are in Florida, all the orange trees having been self-sown, mainly by the seeds being carried by birds into the brush, and when the plant has grown up the thickets have been cleared away, leaving the young orange trees standing in irregular groups. No pains is ever taken to improve the variety, and no particular attention of any kind is given to the trees, the cleared land being the main consideration for cattle grazing. The doctor says of the introduction of the orange:

When the English landed in this island they found here the sweet and bitter orange and the lime. The citron and shaddock are of more recent introduction; and at the pesent time nearly all the useful kinds of the orange family are either widely disseminated or to be found as growing specimens in our botanical gardens. The *Ægle marmelos*, or Bael fruit, is yet scarce; the Japanese orange, or kumquat, is almost unknown, and some kinds of lemon, notably the bergamot and lime, are still wanting.

After speaking at length of the conspicuous and distinctive characteristics of the orange tree as evidenced in the leaf, the flowers, the seeds, and the rind, he says:

The sweet oranges grown in Jamaica have been, up to quite recent years, of no particular or named variety. They have been grown from seed; and it speaks much for the perfect suitability of the soil and climate in most parts of the island that such excellent fruit should have been produced under a plan which embodies none of the teachings of horticultural art, under a plan, in short, which is one of neglect or lucky chance left to take the place of intelligent guidance. The earliest cultivators of oranges in this island were the enslaved negroes, and the oldest trees yielding the largest crops are only to be found on those parts of estates which were set apart for the cottages and gardens of the slaves. I know of a small sugar estate on which, forty years after emancipation, the fruits of the orange trees planted by the old negroes round their dwellings, were sold to a contractor, without any expense of labor, for £40. This was almost at the commencement of our fruit trade, and the crop (more carefully handled now than then) is worth more than double the money. Our common variety, then, is a mixture of seedlings, some of the fruit being really excellent, of large size, of good flavor, and of qualities which achieve for it a popularity in the American market. Naturally, when the cultivators trust only to seedling trees for their crops, the best fruit will be produced in the most highly favored localities. The orange tree requires a deep, rich soil, a warm climate, with plenty of sun to ripen and sweeten the fruit, and plenty of moisture to keep up its growth. These conditions of soil and climate obtain in the parish of Manchester, which is famous for its oranges, also in the cooler parts of Clarendon and St. Catherine, and in St. Ann's, from all of which parts the best oranges are exported.

Of the methods for propagating desired varieties, he says:

We owe the large number of varieties to the tendency which the orange has to "sport," as gardeners term the tendency of seedlings to prove different from the parent plant. Whilst this tendency is of some advantage as affording the chance of improvement, it is a disadvantage in that it prevents the propagation of the tree by means of seed, for when seeds are sown the resulting tree is much more likely to be inferior to than it is to equal or surpass its parent. Hence the necessity for special means of propagation, as by cuttings, layering, budding, and grafting. The orange tree is not usually propagated by cuttings, but it can be done; nor by layers, and yet, as a matter of fact, a modification of the method of layering, known as layering by elevation, is practiced in the case of the orange. Almost everybody is familiar with the process of laying down the shoot of a grape vine. The branch of the vine is simply laid in a shallow trench; it is pegged down in its place, or a stone is placed upon it to keep it down. The trench is then filled up with earth, which should be kept moist, when, in about three months, a copious supply of roots has been thrown out by the branch in the trench, and the shoot may be cut off from the parent vine and be planted in an independent position. Now, in the case of a high-growing tree like the orange, we cannot bring the branch down to the ground, but we can carry up the soil to the branch. It is done in this way: A flower pot or box is made with a slit in its side, so as to receive a growing branch, which is first of all prepared by wounding or wringing the bark, so as to cause it the more readily to throw out roots. The flower pots or boxes are then filled with soil and secured in their places by cords or props. The earth in the pots is kept moist by frequent waterings; and the result is that in a short time roots are thrown out, after which the branch may be sawn off below the flower-pot, and it is ready to be planted out. This plan is now greatly resorted to by the Portuguese in the Azores; and I should like to read the following

short extract from the account of their method by a visitor to the orange groves of the island of St. Michael. He says: "The trees are increased in a curious way. The mode of propagation was derived from the Chinese, and has been much in use of late years. A branch of the diameter of 4 or 5 inches is chosen, around which a circular incision is cut. Around this straw matting is wound in the shape of a funnel, and filled with beaten earth from the middle of May to the middle of June. Roots soon begin to push, and by the following winter it is provided with sufficient to support it when detached from the parent stem. The young plant thus obtained often bears fruit at the end of two or three years."

This mode of propagation has simplicity for its recommendation. By its means the possessor of any good kind of orange tree could soon establish a considerable number of the same kind, and without the exercise of any special skill. But it is a slow process of multiplication compared with budding and grafting, which in fact are the modes adopted by nurserymen. For these modes stocks are necessary. Stocks may be raised from seeds, or full-grown bitter-orange trees, or sweet-orange trees of inferior kinds may be cut down to stumps and a bud or graft inserted. For the theory on which budding and grafting depends I must refer you to horticultural works, and also for the details. Let it suffice here to state that the process is by no means difficult, and may be acquired by any persevering grower simply by attending to the directions.

As to the laying out of an orchard, he says:

This fruit tree requires plenty of room; close planting, by shutting out the sun and air, proves a mistaken policy. It has been observed that in the countries where wild oranges form thick-set forests these trees bear very little fruit, but if a wild orange tree is found growing in an open space it is then seen to yield fruit in abundance. It has also been shown with cultivated trees that close planting diminishes the yield. Orange trees should not be planted closer than 20 feet apart, at which distance there will be 108 trees to the acre; at 22 feet apart there will be 90 trees to the acre, and at 25 feet apart there will be 60. These are good medium distances which should be adopted in laying out a close plantation, grove, or orchard, but a wider distance, say 30 feet apart, may be adopted with trees that are known to attain a large size. For Tangerine oranges, which are of compact habit, the medium distances will be found best suited. Remembering the long life of the tree and the permanent nature of the plantation, no amount of pains can be deemed misspent in fully preparing the ground. Large holes should be dug for the young trees, and manure should be added to insure a thrifty growth whilst the plant is young. The soil round about the young trees should be kept loose by frequent digging; but experience in Jamaica has shown that it is not always safe to adopt the plan of mulching. The dry grass, weeds, and trash used in mulching too often prove a harbor for worms and enemies which injure the young trees. In dry seasons, however, mulching is a great advantage, and with the caution already given it may be adopted.

In orange planting it is not likely that any profitable return will be obtained from the trees for eight or nine years, and it therefore becomes an important consideration to know whether the cultivation of the intervening soil in any other species of crop can be carried on to advantage. Some horticultural writers have condemned the system of catch crops for the reason that they tend to exhaust the soil. This is undoubtedly the case, but, if manure be supplied, any kind of catch crop may be grown. If manure is scarce they had better not be resorted to. Indian corn and castor-oil seeds are objectionable as catch crops, because they take away from the soil that which the orange tree requires; but peas and beans and most garden vegetables are suitable. Coffee trees should never be grown in proximity to orange trees, for in that case both alike will suffer. This error in planting may, however, be frequently seen in various parts of the island. It should be known that the orange tree is a ravenous feeder, and will only succeed in soils that are naturally rich or whose fertility is kept up by regular manuring.

The doctor next takes up the mineral constituents of the orange tree, and adapts the teachings of vegetable physiology and agricultural chemistry to its requirements. He says:

Let me now ask your attention to the tables of analyses of the mineral constituents of the various parts of the orange tree, which are submitted before you in the printed syllabus. The analysis by Messrs. Rowney and Blow is a most instructive one, as it deals with all the parts of the tree, viz, the root, stem, leaves, fruit, and seeds. The percentage portion of the ash is also given, which makes it available for practical computations as to the actual quantity taken away and the weight of materials which ought consequently to be returned. The analysis by Mr. Richardson is of the fruit only, and the percentage of ash is not stated by this chemist. But it may be assumed that the proportion of ash in the entire fruit is about 4 per cent., while for

manuring purposes it will be safer to estimate it at 5 per cent. On this estimate in every ton of crop of 2,000 pounds there will be removed from the soil 100 pounds of mineral matter, distributed, according to Mr. Richardson's analysis, amongst the several constituents as follows, viz: Potash, 39 pounds; soda, 8 pounds; lime, 23 pounds; magnesia, 6½ pounds; sulphuric and silicic acids in small proportions; but of phosphoric acid no less than 14.1 pounds, and of phosphate of iron about 1½ pounds. Essentially the same results may be deduced from the analysis by Messrs. Rowney and Blow, and in passing I would ask you to note particularly how that phosphoric acid in combination is there shown to exist in fairly large proportions in all parts of the tree. If phosphoric acid were a plentiful substance in soils naturally, there would be the less reason to dwell upon its importance as a constituent of the orange and other crops, but, unfortunately, it is not plentiful. In many soils it is very scarce, and in good soils it exists only in small proportion. It has been computed that 100 pounds of good soil are not likely to contain more than half a pound of phosphoric acid. Very fortunately for the agricultural interest in Jamaica this prime constituent of fertile soils is not deficient. Our limestone soils are of marine origin, and they contain phosphoric acid in appreciable quantity. If they did not the island could not have gone on exporting coffee for more than a hundred years without having to import this element to replenish the soils of the coffee plantations. Nor could we hope to export oranges for any lengthened period were it not that the soil is originally rich in this element. It is at the same time quite true that our exportations are constantly diminishing the fertility of our soils, and the proposition is also true that the orange tree will not give an abundant and profitable crop except the soil be kept in a high condition of fertility. Wood ashes, burnt limestone, and bones, or some other form of phosphate of lime, are the manures required by an orange grove, and these, along with farm-yard compost and forest leaves, should be liberally supplied.

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To return to the orange tree and the question of pruning. The orange tree differs from coffee trees and most fruit trees in that very little skill or labor in pruning is required. As already stated, the fruit is formed on young shoots of the current year's growth, and consequently pruning this tree cannot exert the same influence as in pruning coffee, which requires ripened wood for the bearing shoot. Fertility in the orange is promoted by manuring, and pruning may be simply restricted to cutting out dead wood and misdirected branches, or to giving a desirable shape to young trees. To stimulate a bearing tree to its utmost productiveness, the following plan may be followed: Let a cord be passed loosely round the trunk of the tree, and with the distance of the uttermost branches from the stem for a radius, let a circle be marked on the ground round the entire circumference of the tree. A deep trench, fully a foot wide, should be dug along this line and be filled up with a mixture of bone-dust and well-rotted manure; finally, let the trench be covered by the loosened soil. The effect of this treatment will be to stimulate a growth of young rootlets, which will feed upon the enriched soil of the trench; the result of this will be that a strong growth of young shoots will everywhere take place amongst the branches; and, as a final consequence, the tree will be full of flower and fruit. When the season's growth has taken place, it will be found that the tree has gained in size to the outer dimensions of the trench.

Of the preparation for market he says:

Within the past few years great improvements have taken place in the modes of collecting and packing the fruit. At first, in the early history of our fruit trade, the oranges were rudely knocked down from the trees by means of long sticks, with no more care than a pen-keeper's cattle man would take in knocking down a lot of bitter oranges as a feed for the pigs. They were carried loose in carts to the port, and at the port the oranges were shipped in bulk. With all this bruising and want of care it is not surprising that cargoes on arrival at New York were found to be in such a damaged state as to be next to worthless in value. These early shipments indeed seem to have been good for no other effect than to teach the American consignees two things, one of which was the excellence of a Jamaica orange when it happened to reach New York in good condition, the other was the lamentable ignorance of our people of all that pertained to collecting and packing the fruit. American contractors next appeared upon the scene. These agents had been sent out to make purchases of growing crops, and to teach and superintend improved methods of packing. They brought with them hundreds of pairs of small, stout pruning shears, of no great monetary value, which they gave away to the laborers, whom they taught to cut off the orange fruits by the stem and to deposit them carefully in a basket. They also taught that the oranges should be carefully laid on shelves and floors for one or two days, then to examine them for signs of decay, and to wrap up in paper and pack in barrels only those which were sound. These teachings, wherever they were intelligently followed, had a good effect. The extra value of Manchester "stem-cut" oranges in the New York market

soon proved that care meant money, while carelessness signified loss. Our creole middlemen and contractors soon became more exacting as to the careful handling of the oranges they bought from the peasant proprietors, and the upward tendency of local prices has steadily gone on as a consequence. Seven or eight years ago the wholesale price of oranges in the interior towns was sixpence per 100, and their value in New York was a thing not to be foretold from the prices-current, for very often the shipment of such fruit entailed a heavy loss. Nowadays the price of a barrel of wrapped oranges is $3, and the price obtained in New York fluctuates between $5 and $7. Under the improved modes of packing the trade has steadily gone on increasing, until it is now an established and most important industry, representing, according to the latest returns, an export value of £37,567, obtained for 34,000,000 of oranges.

And of the several competitors in the fruit market, he says:

For the possession of our actual and possible future markets we have certain competitors. The principal of these is Florida; next comes Cuba, which ships oranges principally from the port of Havana. The island of Porto Rico is rather a formidable competitor. Mayaguez is the principal port of shipment, and the fruit is so fine that it fetches good prices in the American market. Of Jamaica oranges 400 are taken as the average number contained in a barrel, but of the oranges shipped from Porto Rico a barrel contains on the average 350; in other words, seven of such oranges are equal to eight of those sent from Jamaica. They are also said to keep well. The extra size denotes careful cultivation, and the better keeping qualities tell of care in picking and packing. The Bahama Islands usually send oranges to the American markets, but this year the growers have been unfortunate, as the crop is reported to have been entirely destroyed by a succession of heavy gales. The other West India Islands must also be regarded as possible competitors, though up to the present they are not actively competing. British Honduras is also a competitor, both in bananas and oranges, and the opening up of a direct line of railway between Mexico and the American frontier, which has just now occurred, also suggests Mexico as a competitor, if not with Jamaica, at least with Florida. California is even a competitor, but the effect of her competition is simply to supply the markets on the Pacific coast, and even there California has to struggle against the shipments of oranges from Tahiti and other islands in the Pacific. At present the countries bordering the coasts of the Mediterranean are competitors more for the supply of lemons to the United States than of oranges. The Azores have their principal orange trade with England, and only a limited trade with the United States. In the Azores they have great difficulties of climate to contend against. Westerly gales, sweeping over the wide expanse of the Atlantic, are so violent as to be very destructive to the orange crop. To overcome the disadvantage, expensive structures of high-walled inclosures of small area have to be resorted to in order to provide shelter. It need hardly be remarked that all such difficulties and expense are spared in Jamaica.

Let me add, in conclusion, that Jamaica is admirably adapted for orange cultivation. The soil, the climate, the rapidly-increasing steam facilities for transportation, and the cheapness of land seem to me to combine to make of this island an especially desirable field. As I have said, the fruit actually grows wild, and without other cutivation than keeping down the bush. If the same intelligent care and attention were given to the growth of the tree and to the proper packing of the fruit for market that obtains with us in the United States, it would prove a most profitable and pleasant occupation to all engaged in it. But the cultivation is regarded as secondary to the use of the land for cattle or sheep pasturage, and the care and handling of the fruit is still, as a rule, of the roughest and most careless description. Nearly 50 per cent. of the fruit, on an average, is either spoiled or seriously damaged before it reaches a market, and the greater portion of this great loss is due to rough and careless handling.

GEO. E. HOSKINSON,
Consul.

UNITED STATES CONSULATE,
Kingston, Jamaica, March 27, 1884.

ORANGE CULTURE IN JAMAICA.

REPORT BY CONSUL HOSKINSON.

In further continuation of the subject treated of in my dispatch of the 27th of March, I have now the honor to forward, in a connected form, the notes of an experienced observer and cultivator of the orange tree.

GEO. S. HOSKINSON,
Consul.

UNITED STATES CONSULATE,
Kingston, Jamaica, April 14, 1884.

[Inclosure.—Consul Hoskinson's report.]

1. What varieties of trees are grown, and which are the most valuable? At what age do they come into full bearing, and how long do they remain fruitful?

Of oranges, the varieties principally grown are native seedlings, some of which were, prior to emancipation, planted by the slaves near their dwellings, and attended to by simple methods of cultivation. Many of the trees now furnishing fruit for export are the remnants of those planted by the slaves, such as the irregular groves now to be found on sugar estates and coffee plantations. Some of the trees are native seedlings spontaneously springing up in pastures and guinea-grass pieces. Since emancipation the colored people have planted orange trees in their small freeholds in the mountains. This has been done to a large extent in the parish of Manchester, where sweet oranges of good quality have been long grown, and where the soil and climate conduce to excellence in the quality of the fruit. Besides the native seedlings superior kinds of sweet oranges (of unnamed varieties) have been issued from the Botanic Gardens, also Tangerine oranges of a very fine quality. The trees issued from the gardens are budded and grafted. The Tangerines are mostly grafted. It is difficult to say which are the more valuable. The Tangerine oranges fetch the highest price in the local markets, but they are not exported. Of the native seedlings those produced in Manchester are admitted to be the best in the island, on account of size, sweetness, flavor, and for their good keeping qualities. It has also been maintained that they bear handling, packing, and the sea voyage to New York better than varieties grown elsewhere; for example, better than those grown on the north side of the island. Seedling trees begin to bear at eight, nine, and ten years, and are in full bearing at fifteen or twenty years. Grafted or budded trees come into bearing a little earlier from the time of planting out. Nothing definite can be stated as to how long the trees remain fruitful, further than it must be a long time, as trees dating from the era of slavery, and estimated to be fifty or sixty years, and perhaps older, are still in full vigor, and the writer has seen such trees without observing about them any signs of decay from old age. The longevity of the orange tree is well known, but in this island it is difficult to ascertain the age of old orange trees. owing to the fact that their planting was the work of slaves in their own time, and not plantation work. Records of old plantation work still exist, but not of the planting of orange trees. The foreign market for Jamaica-grown oranges has only been opened up within ten or twelve years past, and it is only in recent years that methodical planting has been resorted to.

Of lemons, the known varieties are only two, viz, an old-established seedling variety, producing very large fruit, and seedlings obtained about five years ago by the importation of Sicilian lemons from New York, with the object of obtaining their seed for planting purposes. The fruit obtained from the trees of the last-named variety are of larger size than the fruits from which their seeds were obtained. The trees referred to have borne good crops this season; the lemon, as is well known, coming earlier into bearing than the orange. There is as yet only a limited production of lemons, and the trade is principally in the hands of two growers, who send their produce to New York. For local use, in the preparation principally of lemonade, and in cookery and domestic uses, the lime takes the place of the lemon. The lime grows spontaneously in most parts of the island. It is of the easiest possible culture.

2. Are the trees seedlings, grafted, or budded?

The trees of all these varieties of citrus, orange, lemon, and lime, are principally seedlings. It is only latterly, that is, since the development of the export trade, that budding and grafting have been resorted to.

3. Are the trees troubled with injurious insect pests or fungous growth? If so troubled, what are the means employed for preventing and curing same?

In Jamaica the orange trees have few insect pests, and there are no complaints of attacks of fungus. It is only where orange trees are attempted to be grown in hot and dry localities, as, for example, in gardens in the city of Kingston, and the rather arid plain of the Liguanea, in the parish of St. Andrews, that they suffer from coccus and ants. In such localities lemons and limes suffer less than orange trees; but in the locality referred to the climate is admitted to be too hot and dry for the orange tribe. On the plains of St. Catherine, in the vicinity of Spanish Town, recent attempts at planting orange trees have been made. This plain is an extension of the Liguanea, but the climate is moist and the lands are capable of irrigation by the Rio Cobre Irrigation Works. These plantations were recently inspected by a Government officer, one of the superintendents of the Botanic Gardens, and in his report he speaks favorably of the appearance of the young trees, without mentioning the ravages of any pest. However, it is known that the coccus has attacked orange trees in another locality in the same parish, but the attacks have been subdued by smearing the trees with a composite lime wash, made by boiling together lime, sulphur, and tobacco stems in water. Further in the interior and at a greater elevation the coccus is almost entirely unknown. It has not hitherto been a subject of complaint amongst growers.

4. How far apart are orchard trees planted?

Most of the trees in pastures and on sugar estates and coffee plantations stand very far apart; indeed, they may be said to be isolated trees. In close plantations the distances are between 20 and 30 feet apart. In the small grounds of the peasantry the trees may be observed so closely planted as to be in contact. Wide planting, however, is preferred by intelligent growers as tending to the best results. Tangerine oranges are planted at 22 feet apart, and larger sweet oranges at 25 to 30 feet apart; lemons, 18 to 22 feet.

5. Are orchards inland, or on the sea-coast, hillside, valley, or upland? Where do they yield best?

Plantations of orange trees are made principally at elevations above 1,000 feet. In Manchester the elevations will average 2,000 feet. Undulating valleys are principally selected on account of the greater depth of the soil to be found in such spots; also on account of its greater richness. The soil principally selected is that of the white limestone formation of Jamaica geology, known as "honeycomb rock." The resulting soil is a strong red earth, calcareous and ochery, owing to the presence of red oxide of iron. Orange trees yield the best results on the limestone soils, both on account of constituents promoting fertility and on account of the perfect natural drainage of such soils.

6. How near to the sea-shore are the orchards?

The sea-shore is avoided. The powerful sea-breezes (trade winds) are hurtful to the blossoms and tender branches. At an elevation of 500 feet the sea-breeze ceases to be troublesome. The sea-shore is also too arid; and, as a rule, the soil of the coast line is sterile and unsuitable.

7. Is there any system of artificial irrigation in use, and is the ground in orchards between trees cultivated; if so, how many times per year?

Artificial irrigation is only practiced to a limited extent in the plain of St. Catherine, and its application to orange trees must, at present, be regarded as experimental, merely. The principal crop cultivated between orange trees is guinea grass; but some of the best growers prefer to keep up a clean cultivation, the number of such cultivations and cleanings being determined by the growth of weeds. To keep up a clean cultivation in certain low and moist districts would require a cleaning every three weeks; but longer intervals, as of eight or ten weeks, could be taken in drier portions of the year. The general practice, however, is to allow the grass to grow, and to keep weeds and shrubby undergrowth cut down by means of a cutlass or bush-knife, which is done three or four times a year. In the grounds of the peasantry the whole list of cultivated crops in the tropics might be enumerated as crops cultivated between orange trees. It may suffice, however, to mention yams (*Dioscorea alata*, *Dioscorea trifida*, etc.), cocoes (*Colocasia esculente*), bananas and plantains (*Musa sapientum* and *Musa paradisiaca*), coffee shrubs (*Caffea arabica*), papaws (*Carica papaya*), annatto (*Bixa orellana*), and small culinary vegetables. The "yard" or "provision ground" of the peasant is generally a perfect medley of vegetable growth, including, besides orange trees, almost everything else. In such places the cultivation of the orange tree is associated with the stirring and cleaning of the ground necessary for the smaller crop.

8. Give the yield, proceeds, and cost of cultivation per acre per annum in the best orange orchards?

Owing to imperfect data it is difficult to give particulars as to yield, proceeds,

and cost of cultivation. Undoubtedly the yield could be increased by more careful cultivation and judicious manuring. The yield in a tropical climate may be described as more continuous than in a warm temperate or subtropical region. Orange trees are observed to be in flower and in fruit at the same time. The tendency to continuous flowering is so strong that every copious shower may be said to be followed by a growth of young shoots with their flowers. This tendency greatly prolongs the season of fruit. It is scarcely an exaggeration to say that sweet oranges may be obtained all the year round, but the principal season of fruit is from September to April. This tendency is even stronger in the case of the lime, which is to be had in plenty for ten or eleven months of the year. As to proceeds, it is only when the orange crop is sold in bulk to a contractor that the figures become known. This is the general practice on sugar estates wherever oranges may be growing. The cost of cultivation has a wide range, from nothing at all where it is neglected, as is too often the case, to the heavy expense of maintaining a clean cultivation. In the orange districts nearest to Kingston the prices obtained by the peasant proprietors (who sell small lots weekly to carters and dealers) on the spot range from nine pence to 1*s.* per 100 hand-picked and with a small portion of the stem remaining. The buyer conveys them to Kingston, wraps them in paper, and packs them in barrels for transit by steamer to New York, Philadelphia, and Baltimore. At this rate the yield from single trees has been estimated to range from 10*s.* to 20*s.*, and even more according to the age and size of the tree. Growers who pack their own oranges usually obtain 12*s.* a barrel in Kingston. Latterly, the tendency of prices has been upwards. Manchester "stem cut" oranges, carefully wrapped and packed are worth 16*s.* ($4) a barrel in the local export market. In New York they are worth from $5 to $8 per barrel according to fluctuations in the market. A barrel contains from 350 to 400 oranges. Thus it will be seen that the profits of the large grower greatly exceed those of the peasant.

GENERAL REMARKS.

The spontaneous character of orange cultivation in Jamaica is a noticeable feature. It is only during recent years that a new character is being given to the culture by systematic planting and increased attention. The official count of oranges exported in the year ending September 30, 1883, is 34,000,000. Almost all these were wild oranges or spontaneously grown fruits. The climate of Jamaica, in the elevated portions of the interior, is believed to be exceedingly well adapted to the cultivation of the orange, and the soil also. The excellent seedlings spontaneously grown may be adduced in support of this belief. When cultivation is bestowed the first effect is to increase the size of the fruit. Manuring is much neglected, but when manures are applied the increased yield and the more rapid growth of the tree are very noticeable. The tree is a gross feeder, and requires lime, potash, and phosphatic and ammoniacal manures. Cow manure is the compost applied in Jamaica. The orange industry is limited to the export of the fruit to the United States and Canada. No commercial attempts have been made to extract the essential oils for perfumery.

The length of the season of fruiting in this island is also noteworthy. Those who are experimenting with irrigation entertain the idea that the season may be controlled so as to produce fruit at any desired time of the year by its aid. But this may prove a doubtful advantage, as summer grown oranges would enter into competition with northern fruits in their own markets. For the same reason a summer crop of bananas is not so valuble as the crop produced during the absence of northern fruit. The natural close of the orange season in Jamaica is marked by the fruiting of the Star apple, and then all classes prepare for themselves the tropical dainty which the creoles style "matrimony." This is a mixture of fresh orange juice with the pulp of the star apple, to which various flavors are added according to taste. But the simple admixture is a delicious compound and is universally relished.

FRUIT TRADE OF JAMAICA.

REPORT OF CONSUL HOSKINSON.

[Republished from Consular Reports No. 22.]

The year 1868 may be said to have seen the first attempts made in this island to develop the almost spontaneous production of fruit and to create a trade in the article which, increasing year by year, has assumed dimensions of such importance as to give it a place beside the long-established staple exports of the colony.

Previously there seem to have been some exports of fruit from Jamaica, but of so trifling a character as not to merit any distinct mention in the published returns of the exports of the island; and its inception in that year was mainly due to the enterprise of an American shipmaster, Capt. George Bush, whose business taking him to Port Antonio, a port on the north side of the island some 40 miles distant from Morant Point, its easternmost end, and since become its leading fruit port, saw the feasibility of establishing a lucrative business in transporting bananas to the United States, and commenced doing so in small quantities, in which he was followed by others, with a more or less varying degree of success, until 1872, when several of the fine fishing fleet of Cape Cod, in search of profitable employment out of the fishing season, becoming engaged in freighting fruit to be sent to Northern and Southern ports of the United States, and the inauguration of a regular subsidized line of mail steamers between Kingston and New York, gave such an impetus to the trade that it has kept steadily increasing each succeeding year. These sailing vessels have been gradually superseded by steamships, though a few still remain in the business. The following is a list of the steam vessels engaged in carrying fruit to the United States, with their average capacities:

From Port Antonio to Philadelphia, the steamer Tropic, D. J. Foley, and Acadia, under the American flag, and having capacity for about 10,000 bunches of bananas each, and making monthly trips. To New York, steamers of the Atlas Mail line, twice a month, and having capacity for 8,000 to 10,000 bunches. To New Orleans, the steamer Chase or Lucy P. Miller, under the American flag, and having a capacity of 8,000 bunches, making a trip every three weeks.

From Kingston to New York, steamers of the Atlas Mail Company, twice a month; capacity 10,000 bunches. To Baltimore, a steamer of the W. I. and P. Company, having capacity for 6,000 or 8,000 bunches, once a month, and the steamer Gulnare, of 5,000 bunches capacity, once a month.

Besides these, the steamers Pomona and Edith Golden, belonging to a local firm, make monthly trips to New York from north-side ports, carrying from 5,000 to 8,000 bunches each trip, and the steamers of the North and South American Steamship Company make occasional trips for fruit as freight offers.

The government of the colony have a contract with the Atlas Mail Steamship Company, of Liverpool, for carrying the mails twice a month to New York, and oblige them to reserve 400 tons space on each trip for freight. This contract was made for the special purpose of encouraging the fruit industry; and while the company performs its obligations in regard to time, it cannot be said that it pays very much attention to the interests of the shippers of perishable commodities, which form the greater part of their cargo each voyage. Much complaint has been and is made by those interested of their poorly ventilated steamers, and of their agents and their employés in general. The steamers come here from Porto Rico, where they take in large cargoes of sugar and molasses, the steam from which arises and is very detrimental to the fruit that they carry in their "between decks." One of their vessels which left here this season thus loadod is said to have almost totally destroyed a large cargo of bananas that were shipped on her. This company receives from the government $2,500 annually, in consideration of their services as described.

CULTIVATION OF THE BANANA.

The banana is an annual, the fruit coming to maturity about a year from the time that the shoot is planted; the trunk of the tree then attaining a height of 8 or 10 feet, and of perhaps 36 inches in girth. From the trunk, which is of a porous, fibrous nature, are thrown out long palm-like branches to the number of half a dozen or more. The bunch of fruit appears at the juncture of the trunk and branches, and consists of 4 to 12 of what are termed "hands," each "hand" having 8 or 10 bananas on it; a bunch of 8 hands being the standard size of shipping fruit. From the root of this tree several shoots or "suckers" sprout, each of which, in turn, becomes a tree and bears a bunch of bananas, or may be transplanted. After the bunch has been cut the tree is usually felled; indeed, the tree is frequently felled to gather the fruit. There are a good many plantations of bananas on the island, varying in size from 25,000 to 200,000 trees, but they are for the most part cultivated by the small settlers in the different parishes, and prove a source of great profit to them. Their plantations usually consist of 3 or 4 acres of land, on which they erect a mud hut, with a thatched roof, in which to live, as they are afraid to leave their grounds to the mercy of their neighbors, who prey upon one another without any regard to age, or sex, or relationship. Strict laws have recently been passed by which this class of offenders are publicly flogged when caught, and will no doubt teach the negroes in this island to be more thrifty and to pay more respect to the laws.

The method of cultivation is exceedingly simple. The land being first cleared by the aid of a primitive and ponderous iron hoe, a hole is dug in which is placed the shoot or "sucker," nature being left to do the rest; and unless the season be one of exceeding drought the tree is certain to grow and to bring forth its fruit in from nine to twelve months afterwards. In well-ordered plantations the trees are usually planted from 12 to 15 feet apart, in the form of squares, and, where irrigation is practicable, trenches are dug between to admit of water being let in as often as possible. Bananas thrive best when planted in damp, cloggy soil, and in districts where rain is plentiful.

No great amount of service or skill is expended in the cultivation of this fruit, nor, so far as I can learn, is anything done to improve its quality or size, the main object seeming to be to get the bunch to the dealer mature or immature, in the hope that it will be purchased, if even at a reduced price.

Reform seems also to be necessary in the method of getting the article to market, not unfrequently a distance of 20 miles, which is at present accomplished by means of clumsy springless drays and carts upon which 30 or 40 bunches are indiscriminately placed with some attempt at wrapping in the dried leaves of the tree, and are chafed and scarred by the wheels of the vehicle and by the weight of the driver, who generally makes a comfortable perch for himself on top of the whole. These defects do not present themselves until the fruit has been in the ship's hold some days, when they result in unsightly black patches, which naturally do not enhance their value on their arrival at their destination. American flat wagons on springs, on which the fruit could be placed upright, would appear to be the right kind of vehicle in which to transport bananas to market.

The following is a return of the value of bananas exported from Kingston and Port Antonio during the past 6 years, ending June 30 last:

FROM KINGSTON.

1877	$22,101 59
1878	47,065 91
1879	43,762 50
1880	52,549 17
1881(hurricane year)	12,632 53
1882	56,538 73
Total	234,650 43

FROM PORT ANTONIO.

1877	$45,571 33
1878	89,180 50
1879	68,528 00
1880	134,930 00
1881 (hurricane year)	39,100 00
1882	153,136 60
Total	530,446 43

Considerable quantities of this fruit are also shipped from the ports of Lucca, Montego Bay, St. Ann's Bay, and Port Maria, on the north side of the island. The price rules at about 50 cents per bunch all the year round.

ORANGES.

Of this fruit there are three descriptions—that known as the ordinary orange, which is the orange of commerce; the Seville or sour, which is coarse and bitter, the juice of which is expressed and sent away in small quantities, principally to the United States; and the mandarin, a small red-skinned orange, of which variety there is no large quantity.

The increasing demand for oranges in the United States, together with the regular and speedy means of conveyance thither offered, has created a trade that amounts to-day to very respectable proportions.

Two grades of oranges are shipped from the island to the United States—the "ordinary," which is fruit that is plucked and brought to the seaport to be packed and shipped, and the "stem-cut," which comes mostly from the parish of Manchester, and are put up under the trees on the plantations and brought to this port for shipment, a distance of about 60 miles, partly by rail and partly by drays.

In the case of the "stem-cuts" care is taken to leave on each orange a small portion of the stem, which apparently has the effect of preserving the fruit, as they always command from $2 to $3 per barrel more in New York than the ordinary orange. This may be attributable also to the fact that the shipments of this kind of orange are for the most part proprietary, and are put up with more care than those shipped from Kingston, which are generally on orders from dealers in New York, and are packed in a most indifferent manner. This fruit is brought in several miles to this city in carts holding from 4,000 to 6,000, and spread out on the ground over night to dry, and then wiped with a dry cloth, and wrapped in paper and packed in barrels or boxes, which are ventilated by means of holes cut in their sides and tops. Women are employed in the packing, and receive the not very exorbitant remuneration of 18 cents for every thousand oranges so wrapped. The scene in one of these packing houses is a novel one to the stranger, and is not calculated to impress one accustomed to witness the orderly and silent proceedings of manufactories that employ large numbers of people in the United States and Europe with much respect for the intelligence of the native black la-

boring man or woman of Jamaica. Between the wrangling of the man who brings his fruit for sale and the superintendent of these establishments, and the thousand and one discordant laughs, yells, and songs of the wrappers, you can with difficulty hear yourself speak, and you experience a sense of relief on emerging from the place. No objection seems to be made to those employed consuming as much of the fruit as they please, for they may be seen at all times either peeling or eating an orange.

Not an uncommon sight, after the barrel has been filled with fruit and heaped up pyramidal shape, preparatory to its being headed up, is to see one of the "dusky maidens" place a flat piece of board on top and throw her whole weight in a sitting posture on it for the purpose of squeezing down the contents of the barrel. This operation, I need hardly say, has the effect of reducing the upper portion of the oranges in the barrel to a pulp.

It is submitted by those capable of forming an opinion that not more than one-fourth of the oranges raised in the island are brought to market, owing to the inaccessibility of the places where they are grown and the want of proper means of transportation. These drawbacks will in some measure be counteracted by the railroad at present being built by the Government, which will go through and near the orange-producing districts, and to be finished in two years.

The ordinary oranges are worth about $7, and the stem-cut about $9 per M, including cost of barrels or boxes, paper wrappings, &c., for the season, commencing in September and ending in March.

Small quantities of the peel of the orange are exported to the United States and used for flavoring purposes.

The following is a return of the values of oranges shipped to the United States from Kingston during the six years ending June 30, 1882:

1877	$27,987 76
1878	29,486 50
1879	41,683 19
1880	50,940 98
1881	85,185 01
1882	194,291 58
Total	429,575 02

Quite large quantities have also been sent from the other parts of the island, notably those on the north side, and perhaps aggregate as much as that shipped from Kingston.

COCOANUTS

are exported to some extent, principally from Port Antonio. A destructive hurricane which passed over the island in the month of August, 1880, destroyed a large number of trees, accounting for the decrease in the quantities exported in 1881 and 1882, and also for the decrease in bananas exported in 1881; it does not seem to have affected the orange crop, judging from the quantity exported in the year that it took place, which is, in fact, larger than in the previous years, and this is doubtless owing to the oranges having matured on the trees before the hurricane came. Cocoanuts may be bought for $20 per thousand; a good many being sent to England in the mest, where that portion is used in the manufacture of brooms, brushes, mats, and articles of like nature; those that go to the United States are clean-husked.

The following is a return of cocoanuts shipped from Port Antonio to the United States during the past six years, ending June 30 last:

1877	$11,620 00
1878	20,645 00
1879	19,150 00
1880	61,620 00
1881 (hurricane year)	17,610 00
1882	17,899 60
Total	148,544 60

MINOR FRUIT EXPORTS.

Limes, pineapples, mangoes, and other less known descriptions of tropical fruit, as well as the juice of the lime, which is expressed and reduced by boiling to a consistency of one to five (then called citric acid) are being shipped in small quantities to the United States, and will doubtless increase as they become better known.

The mango, now perhaps the most common fruit in Jamaica, is of comparatively recent introduction, having been brought here by Captain Marshall, of Lord Rodney's squadron, from the East Indies, in 1782, and was first planted in a private garden back of Kingston, and thence spread all over the island. It is the popular fruit for the native, forming, indeed, during the months of June, July, and August, his mainstay of subsistence. There are said to be more than a hundred kinds of this fruit alone; but this I am inclined to doubt, though it is certain that there are a great many varieties.

Following is a return of the values of limes and pineapples exported to the United States during the two years ended January 30 last:

Year.	Limes.	Pineapples.
1881	$1,284 80	$1,450 50
1882	2,556 54	8,382 11
Total	3,841 34	9,832 61

The following is a return of the values of fruit exported from all parts of the island to all countries from 1877 to 1881 inclusive. Of the total quantities about 99 per cent. went to the United States. The figures are taken from the published returns of the Government, and, as they represent the actual values of the fruit, may show a difference of say 15 per cent. from the returns of this consulate, which have regard to the charges on the fruit exports:

1877	$766
1878	192,016
1879	195,468
1880	249,719
1881 (hurricane year)	215,171
Total	961,140

GEO. E. HOSKINSON,
Consul.

UNITED STATES CONSULATE.
Kingston, Jamaica, July 24, 1882.

FRUIT IN BERMUDA.

Consul Allen supplies the following:

Very few grapes, figs, or oranges are grown here, only occasionally is a vine or tree to be found, and no attention is paid to their cultivation. Some lemons grow wild, but have no market value. Olive trees are to be found, but they produce no fruit. I am informed that some thirty years ago very fine oranges were quite abundant, but a disease killed nearly all the trees, and at the present time native sweet oranges are rarely seen.

FRUIT CULTURE IN PORTO RICO.

REPORT BY CONSUL CONROY, OF SAN JUAN.

In answer to the Department's communication, dated December 4, 1883, requesting information with regard to fruit culture and the extent and value of the fruit industry as conducted in this consulate, I have respectfully to state that there are no grape vineyards, olive trees, or figs cultivated in this province.

Orange trees grow all over this island. The Porto Rico orange mostly cultivated averages from 2½ to 4 inches diameter. The trees average from 8 to 30 feet in height, according to the attention given to their culture. They commence bearing the fourth year and hold their own for fifty years or even more. Their fruit is very sweet, with a fine delicate acid, thin pulp. When taken medium care of the trees produce abundantly, say 1,000 to 1,500 oranges to each tree. These are planted from seeds, say the pit of the fruit, grafting, or budded, but the seeds give better results. The seed should be dried in the air without exposure to the sun or artificial heat. The trees are very seldom troubled with disease, unless entirely neglected, when they are subjected to a sickness called "piojillo," similar to a white mold dampness, which spreads over the leaves, branches, and trunk of the trees. Whitewash, with lime, and ashes at the roots of the trees produces the desired effect.

The trees are planted about eight yards apart. Any closer the trees are not so productive.

This island being very fertile, orchards are to be found in all parts of it, from close to the sea-shore, say about a mile distant from the coast, up to the interior, and up the mountains as high as 2,500 feet above the level of the sea. It is noticed that all kinds of trees produce well, and are much finer in sandy soils, say about a mile or two from the sea, where the soil consists of black sand, or about three parts of fine sand and one part of black earth, with a bottom of hard clay at from 3 to 4 feet below the surface. Most of the orchards are situated from 2 to 5 miles from the sea-coast.

There is no system of irrigation in use, the periodical rains being quite sufficient. The ground in orchards is often cultivated with rice, corn, beans, &c., but more of them with grass. The trees are poorly attended in this district, and in all the east end of the island, very little fruit being raised for export. In fact, so little attention is given to the culture that it may be considered that the orange as well as other fruits are growing in their wild state.

In the west end of the island, more particularly in the district of

Mayaguez, oranges and pineapples are cultivated for exportation to the United States; quite a number of American schooners come out during the months of November and December in ballast from Boston and New York, and load with fruit. I cannot state definitely the yield of the trees, but each tree is calculated to give from 1,000 to 1,500 oranges, which sell readily at $3.25 per thousand.

The cost of cultivation is very little. The crop commences in this district in December and lasts until May. When proper care is taken, however, it is most common to have the trees with ripe and green fruit growing at the same time. Oranges are to be had all the year round, but from May to November in less abundance.

As this island is situated between 17° and 18° of latitude north, there is no great change in the temperature. During the winter months it rains almost continually, but the thermometer seldom indicates less than 75° Fahr.; so there is no frost ever feared. The want of roads all over this province is the great drawback to the cultivation of all fruits that require to be handled with care. The climate is fine and soil very prolific. Even in the highest points of the mountains, among the rocks, the orange trees grow wild. Lemons are abundant the entire year round, but the trees mostly grow without culture; the fruit is small, but very juicy. None are exported.

EDW. CONROY,
Consul.

UNITED STATES CONSULATE,
San Juan, Porto Rico, January 28, 1884.

FRUIT IN SANTIAGO DE CUBA.

Consul Landreau supplies the following information:

No special attention is paid here to fruit cultivation. Oranges, grapes, figs, lemons, and olives are found at least in every plantation, growing without the slightest care or cultivation; the nature of the soil is calcareous and very rich. With regard to oranges and lemons I have noticed they grow better in high lands, and figs, bananas, and rasins in the valleys, and am told by all planters that they never notice how long it is before the fruit trees give full crops.

FRUIT CULTURE IN SAN DOMINGO.

REPORT BY CONSUL ASTWOOD.

I am in receipt of Department circular dated December 4 last, propounding certain questions relative to fruit-growing in this country. I shall try and answer the questions as specifically as possible.

Whilst this is one of the most fertile islands in the West Indies, agriculture of every kind is so sadly neglected that fruits and other vegetable products that would grow spontaneously scarcely yield sufficient for home consumption, especially in this district, where the attention is wholly turned to the production of sugar.

Native products which were sold in abundance and cheaply a few years ago are now the very dearest articles of food. The soil is extremely fertile and produces in abundance with the least possible attention. The climate is mild and healthy generally. Contagious diseases

are unknown here, with the exception of the small-pox, which is sometimes introduced from Havana or other infected ports. During the summer months the days are exceedingly hot, but the nights and mornings are cool, with heavy dews, which are quite refreshing to nature and beneficial to agriculture. The interior is yet in its virgin state, there being no agricultural enterprise to utilize the lands. Industrious and enterprising farmers from abroad with small capital could, in a few years, establish a very large and lucrative fruit trade here. You will be astonished when I tell you that the plow is unknown in this country and the hoe seldom used. Everything grows from nature. The fruit trees which are in existence to-day as a general thing are those introduced years ago by the Spaniards, and no efforts have been made since to increase production.

Raisins.—There are no vineyards here at all; the fruit grows very prolific and luscious, but is sparsely planted by individuals. As the climate is even, I am told that they grow equally as well upon the hillsides as in valleys. In the interior they grow large and more luscious. There are no sea fogs or mists that would be injurious to the fruit in this district, but as they are so sparsely cultivated no idea can be given as to what would be the yield, or the cost of production per acre per annum, but, as we have no frosts or winters, the cost of production would be comparatively cheap.

Oranges grow in great variety, but no special attention is paid to their cultivation. They grow wild, without any care or attention. During the season, they are gathered just the same as any other wild fruit, and brought to market. They are all seedlings; grafting and budding are unknown. There are a variety of kinds, but no attention has been given to locate them by names.

The orange of Manoguayabo is the sweetest orange, I think, in existence; it grows in the district of San Cristobal, about 21 miles from here. The trees are not troubled with any injurious insects. There are no orchards; the fruit grows spontaneously everywhere.

In the Seylo district the oranges are very large and sweet. The trees bear generally from two to four years.

This is an industry which would give grand results, with very little cost, if undertaken as a business.

Lemons and *limes* also grow in large quantities, but without care or attention.

The *sour orange* is the most abundant of them all. The acid is not so strong as that of the lime or lemon. It is used mostly for kitchen purposes, and as remedies for native fevers. The skin is used for preserves; it makes an excellent preserve and would be quite a business for our confectioners. The marmalade made from this fruit is simply excellent.

Olives grow in some parts of the interior, but in such small quantities as not to be worthy of mention.

Figs, if cultivated, would grow in abundance; the trees are large and the fruit very full and luscious. The fruit is not preserved at all, and as there is no special cultivation, no estimate can be made of the cost of production.

The native fruits which grow here, and which could be made a source of great profit if attended to and cultivated, either for preserving or for exportation in their natural conditions, are the mango, orange, sour and sweet, limes, lemons, citrons, guavas, cocoanuts, soursop, cajuiles, caimitos, sapodilles, mamons, and other small fruits.

Industrious fruit-growers from abroad, who would attend to the cul-

tivation of these fruits as a business, could not fail to build up a very large business. The climate, the soil, and the country afford every facility. Thrift, industry, knowledge, and enterprise are the only prerequisites to make this beautiful island a paradise. As it is to-day, the fruit-growing industry is not worth mentioning.

I have given you all of the information that I have at hand, and I trust that it may be beneficial to those who might have a desire to embark in the tropical-fruit industry.

I forgot to mention the pineapple and the banana, which can be grown to great advantage and with but little cost.

H. C. C. ASTWOOD,
Consul.

UNITED STATES CONSULATE,
San Domingo, February 19, 1884.

PUERTO PLATA.

Consul Simpson writes that as yet no fruits are grown in his consular district for export; no raisins, olives, or figs, and but enough oranges and lemons for home consumption.

CAPE HAYTIEN.

Consul Gautier writes:

Oranges, lemons, raisins, figs, and olives are not cultivated in this section of the country, nor exported. In 1876 and 1877 several vessels cleared in ballast for Cuba and Jamaica to load fruit. I called the attention of a number of persons to it, and told them that the money which these vessels were taking away would remain in Hayti if they had turned their attention to fruit-culture.

AUSTRALASIA.

FRUIT CULTURE IN NEW ZEALAND.

REPORT BY CONSUL GRIFFIN, OF AUCKLAND.

In reply to the Department circular of the 4th of December last I herewith submit the following answers to the interrogatories proposed, and such other information as I have been able to procure in regard to fruit culture in this colony.

RAISINS.

In my report on the fruit trade of New Zealand, transmitted to the Department of State October 28, 1883, I expressed the opinion, after a careful study of the subject, in which I was aided by a number of experienced fruit culturists, that the grape would not grow to perfection in the open air in New Zealand, except in sheltered situations and other favorable circumstances; and although my views have been subjected to much criticism and have been strongly combated by those interested in vine culture, I am still inclined to the opinion that the grape cannot be cultivated profitably on a large scale in this country. The climate is so moist and the winters so mild that too much activity is promoted in the vine, and in the summer the grapes are almost certain to become mildewed before ripening.

Some of the vines cultivated are of varieties suitable for making raisins, but no attempt has ever been made to produce them in this colony. Nor is the industry followed in any of the other Australian colonies, not even in the rich grape districts of New South Wales and Victoria. Fruit culturists are aware that the vine has never been subjected to the test of a field crop in New Zealand. Some, however, contend that it grows freely in the open air from the warm latitudes of the extreme north of the colony (New Zealand being south of the equator) to Christchurch, in latitude 43° 30′ south. It is well enough to mention here that the bulk of the population of this colony is composed of people from Great Britain and Ireland, and the number from the wine districts of the south of Europe is very small. The immigrants from France, Italy, Spain, and Portugal arriving here follow principally the occupation of fishing. These immigrants work more in common than those from Britain, and when not engaged in fishing usually form themselves into bands or companies and go to the bush near some navigable stream to cut firewood. While a portion of the men are cutting wood, the remainder are kept busily engaged in arranging small sailing vessels to take it to market. A few years ago a Frenchman, M. Rayer, started a vineyard within a short distance from Auckland. He had very little capital and the land he cultivated was purchased on credit, and in a short time his slender means were exhausted. Some of his countrymen had faith in his ultimate success and aided him with capital, but his death soon followed, and as no one sufficiently skilled in vine culture could be found to take his place, the enterprise had to be abandoned and the vines were rooted up.

Mr. Rayer was of the opinion that the Auckland district is especially adapted for vine culture. He used to say that the industry here was free from many of the drawbacks experienced in France, such as the spring and autumn frosts and the hail-storms so destructive to vineyards there.

The best results, however, in New Zealand have been obtained upon porous valley land, where the alluvial soil has been partly formed by the washing of the limestone strata from the surrounding ranges. In these districts the vines commence bearing when only two years old, and there is a small increase in the third year, and then a larger increase for several years.

No irrigation is required in New Zealand, the rainfall averaging from 45 to 47 inches per annum. The industry of vine culture is conducted upon such a small scale that the value of the produce ought not perhaps to be taken into consideration.

The grape-producing colonies of Australasia are New South Wales, Victoria, South Australia, and West Australia.

The grape industry in Queensland is too young to enable one to speak with any degree of confidence and accuracy concerning it. It is said that South Australia produces higher classes of grapes than any other of the colonies. The Aulanda vineyards, near Adelaide, are perhaps the best known in the colonies. The vines are planted from 4 to 6 feet apart and 6 or 7 feet between the rows.

New South Wales and Victoria have, however, developed the largest grape industry. The former colony has the honor of being the first to cultivate the vine. Victoria comes next. The vine was first planted in Victoria by some Swiss settlers about ten years after its formation into a British colony.

The extent of country in Victoria adapted to the growth of the grape is very large, and it is said, on the authority of Dr. Bleasdale, that between the Barabool Hills and the valley of the Murray River the colony possesses every variety of climate, exposure, and soil that can be found between Neufchatel and Lisbon.

The best varieties of the Victoria grapes are the Hermitage, Burgundy, Carbinet, Sanvignon, and Malbec. The grapes grown in Australia are principally used for making wine.

Mr. Dow, of Melbourne, the author of a series of valuable papers on fruit culture, who visited the United States in 1883 for the purpose of reporting upon the American system of farming, was surprised to learn while in California that raisin-making was a very important industry in that State. He was much pleased with the manner in which raisins are made by Mr. G. G. Briggs and Mr. R. B. Blowers in the Sacramento Valley. Mr. Briggs formerly dried his raisins in the sun, but in the last three seasons he has found it profitable to employ artificial heat to assist in the drying. Out of 1,000 acres of vines fully one-half were of raisin varieties, and amongst these were the Muscatel, Gords, Blanco, and Muscat, of Alexandria. Mr. Dow is of the opinion that the general conditions for growing raisins are more favorable in Northern Victoria and other parts of Australia than in California. He says:

> The progress that has taken place on the Pacific coast of the United States shows how much land-owners in favorable localities of Australasia are missing by not giving attention to the production of a highly valuable product for which there is a good market both at home and abroad.

ORANGES AND LEMONS.

Many varieties of oranges, lemons, limes, and shaddocks are grown in North New Zealand, and with very gratifying results, but no attempt has

yet been made to establish the industry on a large scale. The time, however, is not far distant, I think, when oranges and lemons and other cretaceous fruit will be cultivated successfully and profitably not only for the home market but for export. These fruits ripen to perfection and are well flavored; they are grown in various places from the extreme north to Opotiki, a pretty little settlement in the Bay of Plenty, near the East Cape, a distance of 400 miles from southwest to southeast. The varieties that give the most satisfaction are the large Navel, the Blood or Maltese orange, the Siletta, Saint Michael, the Bitter or Seville orange, &c. All these have been grafted varieties. Sometimes the stock has been a seedling, and on other occasions a lemon tree. These generally fruit in the course of three years after planting. I have heard of seedlings in the Hoskianga and Mangonui districts that have been raised from the pip, and nurtured to a fruiting state. In each district the trees grew without having any especial care. They came into a fruiting state eighteen years after the pip was planted. The trees attained a height of over 20 feet with a proportionate spreading of branches. One of these trees carried last year fully two thousand oranges. I have yet to learn of trees similarly grafted that have shown such a vigor of growth or such productiveness.

The only diseases ever developed in New Zealand orange trees are leaf-rollers and scale insects. These pests are easily destroyed by a strong solution of soapsuds or a solution of Gistuvest's insecticide.

In regard to the question of situation of orange trees, whether inland or near the sea-coast, I will mention that the whole northern peninsula of New Zealand is comparatively narrow, and that no part of it can be said to be wholly free from the influence of the ocean breeze.

I have previously mentioned that no artificial irrigation is required, as the rainfall is regular and abundant. It is believed that in selecting a site for orange trees, care should be taken to avoid prevailing winds, and especially those from the southwest. The best lemons grown in New Zealand are the sweet, or Lisbon. These trees do best in a stiff clayey soil.

The lime tree (*Citrus limetta*) does remarkably well here and grows to a good size. It favors loose, volcanic soil. Mr. J. A. Pond, the Government analyst for Auckland district, has shown in a recent report that the limes from Auckland contain a larger percentage of citric acid than those from the tropical islands in the Pacific Ocean. The Auckland limes contain about the same percentage as the celebrated limes of Palermo, and more than those of Tahiti and the West Indies.

The following table shows the analysis of the juice of Auckland limes compared with that of some of the best known varieties grown for the European and American markets:

Table showing the comparative value of limes from various countries.

Localities.	Specific gravity of juice.	Per cent. of citric acid.	Per cent. of ash.
New Zealand	1,045.40	8.13	.627
Palermo	1,044.85	8.13	.289
West Indies	1,041.30	7.96	.321
Jamaica	1,044.18	8.66	.401
South Africa	1,044.90	8.50	.364
Tahiti	1,041.20	7.55	.845

The fact that limes are grown to such perfection in New Zealand will doubtless soon lead to the establishment of a factory here for the man-

ufacture of citric acid, an article for which there is a steady demand in nearly all parts of the world.

OLIVES.

Olive culture in New Zealand has not yet become a fixed industry, although the subject is one very generally discussed throughout the colony, and Mr. Federli, a gentleman thoroughly skilled in olive culture, is now engaged in delivering a series of lectures in the principal towns in North New Zealand for the purpose of inducing capitalists to cultivate this valuable fruit on an extensive scale.

Olive trees are found growing in many parts of the North Island. They come into bearing from four to ten years after planting. They thrive on sandy soil and on rocky limestone ranges, or on poor soil of any description. The trees are planted from 15 to 30 feet apart. They are propagated by grafting on seedling stocks, cuttings, layerings, suckers, and what are called truncheons, which consist simply in cutting the large limbs of the tree close to the ground and planting them. As to the age at which olive trees reach maturity, it would be difficult to give a correct answer, inasmuch as they have probably not been planted for a longer period than twenty-five years in the colony, and the tree is of many centuries' duration. New Zealand, unfortunately, has no department of agriculture like that of the United States, and it is very difficult to obtain accurate information in regard to this branch of fruit culture or indeed in regard to any new industry connected with farming pursuits. It is well known, however, that the olive thrives well here, and that the fruit is of good quality and flavor, and that several varieties produce excellent oil. About twenty years ago some olive trees were planted in Auckland district by Colonel Matson. These trees were recently examined by Mr. Federli, who stated that they had already reached dimensions which to attain in the climate of Italy would require a growth of at least forty years.

The largest enterprise in the way of growing olives in New Zealand was undertaken by Dr. Campbell some years ago on his valuable estate, One Tree Hill. Dr. Campbell planted about 12 acres in olive trees. They have not yet reached the bearing state, but, like all the olives in this district, they display a healthy and vigorous growth and give promise of a profitable investment. The varieties that thrive best here cannot be correctly given, as their nomenclature has not been preserved. Those that I have had an opportunity to examine have broad leaves like those generally called Spanish olives, although the Spanish varieties are usually recommended for colder localities. The fruit ripens in New Zealand during the months of April and May, and at that time of the year the weather is usually very fine, and the olives are not apt to be disturbed by the heavy rains common in the colony.

Baron Ferd. von Mueller, who has given much attention to olive culture in the Australasian colonies, and especially in Victoria, says that long continuous droughts so detrimental to most plants affect the olive but slightly. He thinks that proximity to the sea is favorable to it, and that hillsides are more eligible for its culture than plains. He recommends that the ground should be deeply trenched, and manured annually, or every two or three years, with well-decayed substances. He says that irrigation adds to the productiveness of the plant. M. Riordet distinguishes three main varieties, of which two are recommended: 1st, the Ceylon, a small-sized tree, which comes into bearing after three or four years, but it bears fully only every second year;

its oil is fine, with some aroma. 2d, the Pendulier, a larger tree, with long, drooping branches, yielding an oil of first-rate quality.

It is estimated that the olive trees at Kawakawa, the beautiful island home of Sir George Grey, K. C. B., would each yield about 20 gallons of fruit. Several of these trees are of the varieties grown for making oil, but I am unable to say whether any oil has been produced from them or not. The experiments, however, that have been made in Auckland district to convert olives into oil were successful, and averaged a yield of from 30 to 40 per cent. of oil to the hundred-weight of olives.

FIGS.

The figs grown in the North Island of New Zealand are of fine quality and flavor, but all of them are consumed in the green state, and the demand for the home market is greater than the supply. No attempt has been made to dry them for export, although they are especially rich in the substance termed grape-sugar. Amongst the varieties cultivated in Auckland are the Brown Ischia, White Ischia, Black Ischia, Brown Turkey, White Marseilles, White Provence, Col de Signora Nera, Black Bourgassotto, &c. Some of the trees grow to a height of from 20 to 30 feet. The equal distribution of warmth and moisture in this climate has probably much to do with their vigorous growth, although Baron Mueller recommends the planting of fig trees in the dry districts of Australia on account of their easy culture and heat-resisting properties. He quotes Dr. Bleasdale as an authority on fig culture in Australia, and says that caprification for the purpose of preventing the fruit from falling off prematurely, or for the purpose of hastening their ripening, is unnecessary. The process of caprification consists in placing the fruit of a wild sort, called the *Capri fig*, amongst the cultivated ones. An insect of the gnat family infests the former, which it leaves to attack the latter, entering to the interior of the fruit by the orifice. Lindley says the utility of this process was doubted by the celebrated Duhamel, and that Professor Gasparini, in a paper written for the Royal Academy of Science of Naples, details a number of experiments which led to the conclusion that the fruit was injured by the process, and that instead of making the figs remain on the tree, it either causes or facilitates their fall, especially when the insect has penetrated into the inside and produced decay by its own death.

Von Mueller distinguishes two main varieties of figs, both of which are adapted for Australia, one that produces two crops a year and the other only one crop. The former, the gray or purple, which is the best, and the white and golden, the last two being the finest in appearance but not in quality. He says the variety that furnishes only one crop a year is the most desirable for drying purposes and the most extensively cultivated in Turkey and along the Mediterranean.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Auckland, April 28, 1884.

FRUIT CULTURE IN SOUTH AUSTRALIA.

*REPORT BY CONSULAR AGENT SMITH, OF ADELAIDE.**

RAISINS.

1. What is the relative position of vineyards; valley, table, or hillside lands; inland or on the sea-coast?

2. How near to the sea-coast are the nearest raisin vineyards?

Of all the vineyards now in South Australia very few are on level plains; the majority are located on undulating and hillside lands at elevations varying from 300 to 1,000 feet above the sea. Some plains only are within 2 miles of the sea, others remote from it in distances varying from 10 to 40 miles.

3. On the coast, are the sea fogs and mist injurious to grapes and apt to cause mildew? If so, what means are used to counteract the same?

Fogs are very rare with us. In the damper air of our valleys slight attacks of oidium have occasionally happened, but never in force, and these are readily checked by one or two applications of flowers of sulphur. On the higher dry lands no mildew has shown itself, and the vines are uniformly healthy.

4. What is the custom of pruning in the best conducted vineyards?

Pruning is much regulated by the kind of vine cultivated. Short, bush pruning is common with us, owing much to the fact that the vines of Spain and south of France predominate with us, as apparently best suited to our warm and dry climate.

In the higher and cooler country, where the Riesling and Hermitage vines are more planted, long pruning and trellising are adopted.

5. What is the character of soil where best results are obtained?

Our soils vary much, but their general composition, formed by the detritus of slate rocks, with often a good proportion of lime, well suits the vine, and our grapes have good substance, flavor, and abundance of saccharine.

6. Are best results obtained on hillside, valley, or table land?

No sufficient data exist to answer this.

7. Are the lands planted to vines cultivated? If so, how many times per year?

The usual cultivation per annum is one horse-plowing and two horse-hoeings. Some vignerons add to this a hand-hoeing round the plants.

8. At what age do the vines come into full bearing, and how long do they remain fruitful?

Vines, when rooted cuttings, begin to bear fruit the third year after being planted out. Grafted vines will bear the first year, if the stocks were old enough to bear. Our vineyards are not yet of an age sufficient to show how long the vine will remain fruitful.

9. Is there any system of artificial irrigation in practice for raisin culture?

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* Consul-General Spencer, of Melbourne, in transmitting the above report, says that Mr. Smith acknowledges his indebtedness for much of the information contained in his report to Mr. Samuel Davenport, of Adelaide, who represented South Australia as commissioner to the Centennial Exhibition at Philadelphia. The consul-general adds that the cultivation and preservation of the varieties of fruit mentioned in the Department circular are in their experimental stage in the colony of Victoria, and he is consequently unable to furnish any information that would be of any value to American fruit-growers.

Irrigation has not been resorted to as yet.

10. What is the yield, value, and cost of crop per acre per annum?

Yield varies according to soil and cultivation and pruning; and so the costs. From two to five tons per acre may be quoted as produce, and £2 per acre cost of cultivation, pruning, and faggoting.

ORANGES AND LEMONS.

1. What varieties of trees are grown, and which are the most valuable; at what age do they come into full bearing, and how long do they remain fruitful?

Many varieties of oranges are grown. Of these I may cite Sabina, Navel, St. Michael, Paramatta (a Sydney variety), Poor-man (also from Sydney), Rio, Maltese Oval, Chinese Oval, Mandarin, Sweet Seville, Bitter Seville, Blood Maltese, Large Marmalade, Bitter Loose-Jacket.

Of the lemon tribe we have, Lisbon, West Indian citron, Bengal citron, shaddocks. It is too early for us yet to report longevity of trees, or even date of full bearing. The flavor of our fruit is excellent.

2. Are the trees seedlings, grafted, or budded?

We graft or bud.

3. Are the trees troubled with injurious insect pests or fungous growth? If so troubled, what are the means employed for preventing and curing same?

Black blight is the sole sickness. Cured by wood-ash wash.

4. How far apart are orchard trees planted?

From 15 to 20 feet apart, usually.

5. Are orchards inland or on the sea-coast, hillside, valley, or upland? Where do they yield best results?

Valley; sheltered sites the best, and inland.

6. How near the sea-shore are the orchards?

I do not know any nearer than a mile from the sea-coast.

7. Is there any system of artificial irrigation in use, and is the ground in orchards between trees cultivated? If so, how many times per year?

Irrigation adopted where practicable, with good results.

8. Give the yield, proceeds, and cost of cultivation per acre per annum in the best orange orchards.

Cannot answer this.

OLIVES.

1. What varieties of trees produce the best results, and at what age?

Our experience too short to answer this question.

2. What is the process of cultivation followed?

Cultivation too limited to assert any practice. Subsoil plowing land is advisable, at uniform depth.

3. What variety of tree produces the "queen olives of commerce"? Are they the selected fruit of the common olive, or a superior variety grown from an improved tree?

I do not know the term "queen olives of commerce." Is it the big Spanish? That is grown here.

4. What age do the trees come into full bearing, and how long do they remain fruitful?

Some varieties sooner mature than others. The French Verdale is an early one. We are too young to quote time of fruitfulness.

5. What is the average yield per acre of mature trees?

I cannot say. Age of tree and cultivation given it will influence results.

6. What is the yield in fruit per acre, and how many gallons of olives are required to produce one gallon of oil?

With me 12 gallons of olives give 1 gallon of oil.

7. How far apart in orchards are the trees?

From 18 to 25 feet apart.

8. When are olives intended for pickling picked—ripe or green?

Picked green.

9. When are olives for oil picked—ripe or green?

Picked best when just ripe.

10. What is the process of preparing olives for table use, and what is the process for extracting oil?

Wood-ash and lime-wash extract the bitter; stone crushers and lever press the oil.

11. Are best results obtained on valley, hillside, or table land?

I cannot say. Stony ground theoretically best.

12. What is the character of soil best adapted to olive trees?

A fair, free mold on stony and limy subsoil best.

13. Is there any system of artificial irrigation in use for olive culture?

I do not know of any. Water needs careful supply not to overdo it, growing wood instead of fruit.

14. How near to the coast are the olive orchards?

All ours may lie within 50 miles of the sea-coast.

15. Give the yield, proceeds, and cost of cultivation per acre per annum.

I have no data for this.

16. What is the annual rainfall, in inches, in your district?

About 22 inches.

FIGS.

1. Kind of trees producing the figs of commerce?

We are not sure of our varieties. No cultivation save in detached localities.

2. Process of drying and curing the fig?

Little attended to. Salt and water moistening, boxing sun-dried figs, I find best plan.

J. W. SMITH,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Adelaide, April 5, 1884.

CONTINENT OF AFRICA.

FRUIT CULTURE IN MOROCCO.

REPORT BY CONSUL MATHEWS, OF TANGIER.

RAISINS.

What is the relative position of vineyards—valley, table, or hillside lands; inland or on the sea-coast?

Grapes are chiefly planted on the slopes of low hills; they are planted on the sea-coast within a few yards of the sea; they are also planted in the interior.

How near to the sea-coast are the nearest raisin vineyards?

In many cases within a few yards.

On the coast are the sea fogs and mist injurious to grapes, and apt to cause mildew? If so, what means are used to counteract the same?

I believe the sea fogs and mist immediately followed by a hot sun are injurious to grapes (except to vines from seed on the spot), as those vines grown near the sea are much affected by mildew; no means are used by the Moors to counteract the mildew.

The mildew or oidium, which is a parasite fungus which covers the surface of the leaves, I have found by experiments can be counteracted by applying two parts of sulphur, one part of ashes, and one part of charcoal dust, well mixed, to the stem close over the roots of the vines, and covered with earth, which operation must be performed in December, after pruning, in order to facilitate the work around the stems. On pruning the vines, all the wounds and cuts should be covered at once with a thick varnish made of tar, linseed-oil, bees-wax, and resin, to which sufficient pulverized sulphur is added. I have found this excellent compound, besides the instant healing of the wounds produced by the pruning knife or scissors, preventing the flow of sap and imparting resistance to the weather, to effectually assist in curing the oidium, when a thorough dusting of sulphur and ashes to the dewy surface of the leaves and blossoms will complete the work. Should, after this, the grapes be observed to be affected by the oidium, a thorough dusting of hydrate of wine will stop the disease.

What is the custom of pruning in the best-conducted vineyards?

The vines are pruned in this neighborhood in a rough manner, and pruned much too long; the main stock is allowed to run *ad libitum*, the lateral branches being cut short, leaving from one to three eyes to each. In the interior of Morocco the short-pruning system is in practice.

What is the character of the soil where the best results are obtained?

In well-drained, loamy soil of a ferruginous nature, with a good proportion of silica.

"Are best results obtained on hillside, valley, or table-land?"

On the sides of low hills best results are obtained sheltered from the east wind.

"Are the lands planted to vines cultivated? If so, how many times per year?"

Cultivated once a year by turning up the ground with a large hoe.

"At what age do the vines come into full bearing, and how long do they remain fruitful?"

In rich soil often at two, but generally at three years, they commence to bear, and not in absolute full bearing until seven or eight years old.

"Is there any system of artificial irrigation?"

The Moors never irrigate their vines.

"What is the yield, value of crop per acre per annum?"

Statistics unascertainable.

ORANGES AND LEMONS.

"What varieties of trees are grown, and which are the most valuable? At what time do they come into full bearing, and how long do they remain fruitful?"

As most of the trees are seedlings, the varieties are numerous; the most valuable are the round, sweet orange, and the small aromatically flavored fruit known as the Mandarin orange. The Mandarin is the most valuable.

Nine years from seed; two years after grafting or budding.

Seedlings remain fruitful over a century; grafted or budded, from thirty to forty years.

"Are the trees seedlings, grafted, or budded?"

They are propagated from seeds, inarching, grafting, budding, and by cuttings.

"How are orchard trees planted?"

Fifteen feet apart, or about 150 trees to the acre, if graftings; seedlings, 20 feet apart, 100 trees to the acre.

"Are trees troubled with injurious insects, pests, or fungous growth? If so troubled, what are the means employed for preventing and curing same?"

Various vine-fretters and kermes are very troublesome, and cause considerable damage to orange trees. The common remedy to a certain extent is to wash the trunk and main branches with a lotion of lime-water, and by watering the leaves with the hand pump. Trees too closely planted, or placed in damp and shady localities, or even not properly pruned to permit light and air through all their branches, create a parasite or leaf disease known as the "demantium monophyllum" or charcoal, which covers the leaves with a black adhesive dust; also the "lichen auranti," which appears as a crust of a gray whitish color. The bad state of health of the trees creates these parasites and fungus. I have cured these with petroleum, which must be applied in a mixed state by churning milk and petroleum to a consistency of cream, as petroleum mixed with water is often injurious. These liquids are unmixable, and when applied in some parts only the petroleum touches the trunk or leaves, and on the others the water alone, while, if well mixed with milk, the strength of the petroleum is reduced, the application is uniform, and the results most certain and beneficial to all trees.

"Are orchards inland, or on the sea-coast, hillside, valley, or upland? Where do they yield best results?"

Orange orchards are planted both inland and on the sea-coast, on valleys, hillsides, and uplands. They yield best results in well-drained, low-lying lands sheltered from the cold north winds.

"How near to the sea-shore are the orchards?"

Some within 200 yards, on the sand.

"Is there any system of artificial irrigation in use, and is the ground in orchards between trees cultivated? If so, how many times per year?"

They are irrigated artificially, mostly from wells from which the water is drawn by animal power, with very primitive draw-wells. The ground is manured and cultivated with a heavy hoe once a year. The yield and proceeds cannot be ascertained in Morocco. The cost of cultivation, including manuring, in the best orange orchards is at the rate of 25 cents per tree per annum; laborer's and pruner's wages from 18 to 20 cents per day.

OBSERVATIONS ON ORANGE CULTURE.

In any country where the medium temperature in winter is superior to 40° and in summer rises to 85°, the cultivation of orange orchards can be made lucrative.

Orange trees are not particular with regard to soil; they grow luxuriantly in the sand, and even in strong and very inferior soils, provided they are manured and copiously watered in the summer. There have been empirics who have written on the orange trees and on the manner of composting the soil, recommending all sorts of filthy nostrums and unwholesome composts which nature never designed, and nobody can form an idea of the mischief which such people do. In nine cases out of ten the leading cause of failure, where trees get diseased or where neither fruit nor flowers are had with any certainty, is due to ill-treatment and poisoning of the roots with the obnoxious mixtures.

Seedlings are always preferred, as they stand cold weather and their yield is enormous; besides, the objects to be attained in raising the orange trees from seed are, first, to procure new varieties, all of which are more or less acceptable as to size, flavor, and shape; secondly, to provide hardy stocks for grafting or budding known fancy varieties, in preference to grafting or budding on stocks raised from the cuttings of citrons, or even of orange cuttings, which are more delicate, of less growth, and short life. In recurring to budding, the hardiest stock of all is that of the bitter or sour orange, the most beautiful of the tribe in form, elegance of foliage, and abundance of fruit. When the medium atmospherical temperature of the spring has reached 70° the seed may be sown and watered regularly, and in fifteen days they will come up. If the seeds are from the finest, ripest fruits, there will be no necessity of budding to perfectionate the fruit. The fruits from trees raised from seed are the earliest and stand well transportation; the flowers of these trees stand best the cold weather.

Excessive dampness and humidity in the soil produces the "chlorosis," or yellow, of the leaves, which at last ends in destroying the tree.

Excessive aridity of the soil is also another cause of suffering to the orange tree, but does not cause its death.

Strong winds only cause the fall of the fruit before ripening.

The fogs and white frost of spring sometimes cause an alteration in the orange tree, which afterwards is shown in the shape of reddish spots on the exterior part of the skin of the fruit, which renders it unfit for use.

VARIETIES CULTIVATED.

The races and varieties known are innumerable, the majority of which are still unclassified. The most interesting are divided in eight groups.

namely: 1st, sweet orange; 2d, sour orange; 3d, Mandarin orange; 4th, limes; 5th, Bermagots; 6th, Pampelmuses; 7th, lemons; 8th, citrons.

1. *Sweet orange.* The sweet orange raised from seed in a warm climate is a vigorous tree, which reaches the height of 15 feet; its foliage large and oblong prolongated, of a dark brilliant green. The flowers are hermaphrodite and pure white. The fruit is quite round, with a smooth, yellowish skin. It commences to ripen in the middle of November, and in March arrives at full maturity. Trees from seed without grafting give the largest crops, and it is not unusual for an adult tree to produce from three to four thousand oranges per annum. These trees, if conveniently sheltered from the cold winters, live centuries. Grafted or budded orange trees hardly grow higher than 10 feet in their proper climate, while in others only reach 6 or 7 feet, and even less, and their life is short. The principal sweet-orange trees which are selected by those engaged in the orange culture are the Bigaradia (*Citrus vulgaris bigaradia*) Imperial, the Royal Bigaradia, the Bigaradia of silvery leaf (*C. vulgaris argentea*), the Bigaradia of spotted leafs (*C. vulgaris variegata*), the Bigaradias of double flower and of violet flower, and the Bigaradias of round fruit, angulated fruit, spotted fruit, and crowned fruit; also the Bigaradia of myrtle leafs and that of double flower, producing cake-shaped fruit. The Balearic or Mallorea orange, large, smooth, thin skin, of vigorous growth. The Portugal or China orange, of less growth than the Balearic, but producing very large fruit. The orange of Nice, highly favored in Provence for its elegance and beautiful fruit. The Maltese or blood orange is very rich, and also an abundant bearer, the fruit having a pulp stained with crimson; the foliage resembles that of the Portugal or China orange. There are numerous other varieties, most of which are more nominal than real, mostly the results of hybridizing, and which are more of a botanical ornament than of profit.

2. *Sour orange.* The sour or bitter orange, many of which have curious and very interesting foliage, portly and handsome trees, with gold and silver striped leaves, myrtled leafed, willow leafed, plain and striped, tricolor striped, and many others very showy. The flowers of these trees bring the highest prices in market. Their fruit is preferred for confectionery, marmalades, &c. The sour or bitter orange tree is still more rustic and hardier than the sweet orange from seeds, and its growth is more rapid. There is of this tribe the China sour-orange tree, which is dwarf, only growing to about 4 or 5 feet in height the most.

3. *Mandarin.* The Mandarin orange, originally from China, propagated also from seed, was introduced in Europe about the middle of the present century, only grow from seed to a height of 12 feet, and to about 6 feet when propagated by grafting or budding. The pulp of the Mandarin orange is almost free from the rind; the latter is very aromatic. The Tangerine orange, recently introduced in Europe, is a variety of the Mandarin; its fruit is less than half the size of the Mandarin's, in fact often no larger than a walnut, but exceedingly sweet and perfumed. The Japanese orange is a shrub which the Chinese cultivate on a large scale, and known by the name "Kumkoat"; is almost unknown in Europe; it attains a height of 4 feet, and by pruning it is grown in pots, where it only grows to about 20 inches, covering itself with a fruit no larger than a good-sized cherry. The rind is so thin and smooth that it is eatable; they are preserved whole in sugar. I have four in pots from 15 to 18 inches in height with ripe fruit; they have ripe fruit from December to April; they resist the cold weather better than the hardiest of the orange tribe, but in summer they require hot weather to bring their

fruit to maturity. I strongly recommend this interesting and profitable shrub to our California orange-growers. One acre of land will accommodate 500; manure annually, and if possible in summer. An irrigation or two of manure water will bring the fruit to perfection.

4. *Sweet limes* (*Citrus limeta*). The sweet-lime tree has the bearing and foliage of the lemon tree; small white flowers; the fruit more or less large or small, according to the varieties; its color is of a pale yellow; the pulp is an insipid sweet, slightly bitter. The varieties known in the south of Spain and in Morocco, where they abound, are the "Roman," the "Melaroce," and "St. Jerome."

5. *Bergamot.* Bergamot orange (*Citrus bergamia*). Tall tree; oblong leaves of medium size, of a lively green on the upper surface and paler on the under part than the other varieties of orange; very small flowers and of a particular mild aroma. The fruit is depressed in shape, smooth and of a lemon-yellow color; the pulp is slightly sour, and of a pronounced aromatic flavor. The chief varieties are the common Bergamote, the orange Bergamot, the sweet lemon Bergamot, and the Adam apple Bergamot, and some others which probably are only monstrosities propagated by grafting. The cultivation of the ordinary Bergamote is very lucrative by the great quantity of volatile oil extracted from the rind of its fruits.

6. *Pampelmuse.* Pampelmuse (*Citrus decumana*) probably is a species entirely distinct from the preceding, nevertheless it has certain similiarities to the natural ordinary sweet orange from seed; it grows the same height; very few thorns. It differs in foliage—broad leaves and large flowers of a pure white. The fruit is depressed and of immense size, of a pale yellow, and only matures on the second year; they require shelter and a warm locality. The "Lumias" are a variety of the Pampelmuse.

7. *Lemons* (*Citrus limonum*). This species is more a large shrub than a small tree; they require a warmer climate than oranges do; their flowers are white inside and reddish on the outside. There are numerous varieties. They require less irrigation than the orange tree; are easily propagated from cuttings, which the dealers in orange trees use extensively for budding or grafting.

8. *Citron.* There are various varieties—the ordinary citron, the lemon citron, the St. Jerome citron of very large fruit, the Florence citron, and the sweet citron; the flowers are reddish, pink, white, and violet. It grows well in narrow valleys where the heat in summer is retained during the evenings; it grows admirably on the shores of the Mediterranean in almost any soil, and is easily multiplied from slips or cuttings, which are also used for budding or grafting by the dealers and venders of orange trees.

For California I would recommend raising sweet oranges from seed or grafting the seedlings or stocks of the sour orange, the hardiest of all for cold winters.

Observations on pruning.—The flowers and fruit are produced on the young wood of the current season generally. The pruning has in view three objects, first, to keep the branches from being too numerous, and thereby making the foliage too thick so as to exclude air and sun to a great part of the head; secondly, to check those branches which grow too vigorously for the rest of the tree; thirdly, to remove old and bare wood and make way for the young; the weakest branches should also be removed, and the pruning should be done on dry days during the months of February and March. No shoots should be allowed to grow below the head, unless left for the purpose of propagation by layering in pots and thus obtaining young additional trees.

The orange tree spreads its roots close to the surface; care should be taken not to disturb them when cultivating the soil around the trees.

Nothing is wasted of the orange tree. The leaves, the flowers, and the fruit are all a source of profit; they all constitute a branch of commerce. On pruning the trees the leaves are gathered from the cut branches, dried, and they sell in the markets of Europe from two to four dollars per hundred weight. The flowers are sold for the distillery and other purposes in France at 25 cents per pound. Oranges for exportation are gathered in November when their color begins to change from green to a yellowish; the second gathering for short distances is made in December, and the last for the nearest markets in February and March.

OLIVES.

"What varieties of trees produce the best results, and at what age?"

Several varieties are grown, wild and domestic. It is impossible to proclaim in an absolute manner which variety produces the best results, as in every country one is preferred which suits best the locality and climate, and it happens that a variety, which prospers in a certain climate, in others fails to produce the same results; therefore it must be ascertained by trials of the best and hardiest varieties.

The varieties which will stand the severest cold weather are those nearest to the wild, such as the Odessa and the Beaked olive (*Olea Europea rostrata*, Clem.); the olives of these trees are not large, but of a medium size.

There are nineteen defined varieties of olives; the principal ones are, the Royal Seville, of large fruit, which is gathered in a green state for pickling; the queen of commerce, of very large fruits, with small white spots, also gathered while green for pickling; the Eicholine, of long oval shape. The Empeltre olive tree produces a small olive, oval-shaped, bearing abundantly on the sixth year of its plantation, and increasing every successive year; the fruits ripen very early and yield abundant oil and of a superior quality; is a variety greatly cultivated in Aragon, Spain; a similar variety, but neglected, grows near Mequenez, in this country.

The province of Soos, south of Morocco, produces great abundance of oil. The plantations of olive trees in this province are very numerous; many of the trees are of great size and beauty, and are planted in a very whimsical and peculiar manner in the neighborhood of Messa, the cause of which I learned from Governor Gilali Benhamos: that one of the Emperors being on his journey to Soudan encamped here with his army, that the pegs with which the cavalry picketed their horses were cut from the olive trees in the neighborhood, and that these pegs being left in the ground on account of the sudden departure of the army, the olive trees in question sprung up from them. I have seen the Moors in the province of Angera, between Tangier and Ceuta, planting olive, pomegranate, and quince trees by cutting bits of wood of these trees, from 18 to 20 inches in length and 3 in circumference, which they knocked into the ground with a large stone while the ground was soft after a rain; two years after I saw these pegs, most of which had taken root and were in a fair way of becoming good trees.

The province of Soos produces abundant oil, which is brought to Mogador and shipped to England and France. The people of Ras-el-Wad make two sorts, Tabaluht and Zit-el-aud. The former is made from the olives when green and nearly ripe, with which they frequently grind limes or wild thyme. This oil is very rich and white, and not in-

ferior to the best Florence or Lucca oil. The Zit-el-aud is made from the olives when they are quite ripe and black, and after they had laid on the ground some time. In this state they yield the greatest quantity of oil, but it has a strong taste, which is not disliked by the natives. It is used in Europe in the woolen and soap manufactories.

"What is the process of cultivation followed?"

In the countries where the olive tree is cultivated they generally plant it on the worst soils on the hillsides; they are raised from seed, stakes, slips, cuttings, from young shoots, layers, and by grafting or budding.

Propagation from seed, owing to the oily nature of the pulp attached to the olive seed, is tardy, unless these are placed in lye-water made of potash or ashes for three days, which will remove the greasy substance and allow the water, when sown, to penetrate into the small kernel inside. The soil should be light, well manured, and worked deep; the beds laid out in an open, warm situation. The seeds should be sown a foot apart in drills. The best time for sowing is early in the autumn, and watered. The plants will come up the following year, and the earth may be stirred between them while the weeds are being removed. The second season, when the plants are a year old, they should be budded with known varieties—with those producing the largest fruit, if intended for preserving and speculating with the olives, or with varieties rich in oleous properties, if chiefly desired for the extraction of oil. A year after budding they may be planted in rows 3 feet apart, and the plants 2 feet from one another, in case their final spot is not ready to receive them, or else they may at once be transplanted in the place where they are to remain. In all this lifting and transplanting much care is necessary lest the roots should suffer any mutilation or injury. Thus fallowed, the young tree will commence to bear olives on the third year, and be in full bearing in its tenth year.

The propagation by slips or stakes does not require budding nor grafting, and they make the best olive orchards; all the orchards and groves in Morocco, and in Andalusia, Spain, where we see some of the finest trees in the world, are from slips or stakes. These should be chosen from the knottiest parts of the branches of the olive; they must be four or six verdures old, at least, in rows where the soil has been worked and mixed with well-rotted animal manure, and so placed as to admit irrigation. The slips or stakes should be planted half a yard apart, and one yard at least from each row. In cutting the slips or stakes, the top part, exposed to the air and sun, should be at once covered with the varnish used by grafters to prevent cracking or decay by the rains. There should be no less than two-thirds of the length buried in the ground when they are 2 or 3 feet in length. There are several other modes of propagation from the protuberances of the roots cut in pieces, and planted in rows 18 inches apart, and watered until the shoots are 3 feet high, when they are again separated and transplanted; also by layers, and from suckers, &c. The time for these operations is from the middle of autumn to the first of March. In plowing the ground, care should be taken not to go near the tree and injure the roots; the ground around the tree must be worked lightly with a dented hoe; the vegetable and animal manure must be buried in a ditch dug around each tree, but distant from it from 3 to 8 feet, according to its age and size, in order not to disturb the roots. Vegetables, such as beans, peas, &c., can be cultivated between the rows of olive trees, provided the stubble, stalks, leaves, &c., while still green, are returned to the soil and worked in around the trees.

"What variety of tree produces the 'queen olives of commerce?' Are they the selected fruit of the common olive, or a superior variety grown from an improved tree?"

There are two varieties of trees which produce the large olives of commerce:

(1.) The Royal or Queen, Sevillian, known as *Olea regia* Roz., and *Olea regalis* Clem. The wood of this tree is less hard and lighter in color than that of the wild olive. The branches are tall and straight, the leaves long, and the fruit plum-shaped, its pulp adhering tenaciously to the stone, tardy in maturing, and is gathered green for pickling. When ripe the fruit is of dark violet color. It ripens with difficulty, producing a clear oil of sweet flavor.

(2.) The Sardal Sevillian olive (*Olea Hispalensis* Clem.). (*Olea Hispanica*). The branches are less vertical than the former variety, the leaves are larger, the fruit is walnut-shaped and aromatic. It is very common in Seville, Vera, and other parts of Andalusia. I have seen a few trees of these two varieties prospering in private gardens near Tangier, reared from slips brought from Seville, the fruit retaining its original quality. The queen olives of commerce are not the selected fruit of the common olive, but a particular species of itself, as above described.

"What age do the trees come into full bearing, and how long do they remain fruitful?"

In warm climates, and on its favorite soil, the olive tree comes into full bearing on the tenth year from its grafting, or from the plants of slips, cuttings, or stakes. In colder climates they come into full bearing some years later. The olive tree remains fruitful for centuries. There is an olive between Villefranche and Nice which was famous for its old age in the year 1515. It measures at its base 42 feet in circumference; its average yield of oil per year amounts to 150 kilograms. (A kilogram has 34 ounces.) In Spain and in the island of Mallorca there are olive trees which were old at the time of the Moorish occupation, and which at present continue to produce enormous crops of fine olives.

"What is the average yield per acre of mature trees?"

The acre is not known in the olive countries; lands are measured by the hectare. A secular olive tree of great size, occupying 100 square yards of land, will yield on an average 40 gallons of olives, which is not at all exaggerated, as there are many which yield 100 and even 120 gallons of olives.

The adult field olives of moderate size yield from 20 to 40 gallons of olives. Short olive trees, occupying only 25 square yards of ground, yield on an average about 20 gallons of olives.

In the orange region a mature olive tree, well cultivated, will produce 15 gallons of oil. If the trees stand at a distance of 30 feet from each other, or at about the rate of 75 trees to the acre, there will be a yield of 1,125 gallons of oil per acre.

In Spain they calculate on an average yield of 140 hectoliters (1 hectoliter measures 20 gallons) of olives per hectare of ground every two years, yielding 1,750 liters oil in this form:

	Pesetas.
1,000 liters of refined oil at a medium price of 1 peseta and 25 centimes	1,250
750 liters of inferior oil, at 75 centimes	525
Total	1,775

(A peseta is equal to 20 cents; 5 pesetas to a dollar; 100 centimes to a pesata. Deducting 700 pesetas as cost of cultivation leaves a net product of 1,561 pesetas every two years.)

When the trees are at a distance of 10 meters from each other they yield, on an average, 6,000 kilograms of oil per hectare, of the value of 12,000 pesetas.

"How far apart in orchards are the trees?"

From 30 to 40 feet apart.

"When are olives intended for pickling picked, ripe or green?"

They are picked one month before the olives are quite ripe, when they are of a yellow-green color.

"When are olives for oil picked, ripe or green?"

In the month of November, when the olive changes its color from violet to black.

"What is the process of preparing olives for table use, and what is the process for extracting oil?"

The olives are kept in water until their bitter taste is entirely removed. The water must be changed occasionally. Then they are ready for pickling either in salt and water or with sweet herbs, such as thyme, slices of lemon, &c. The Moors bruise first the olives, and afterwards pack them with salt. The process for extracting oil consists first of all in gathering the olives when they turn black, about the month of November, on a fair day, separating those found under the tree on the ground, and all discolored ones, with which the second quality of oil is made; they must be cleaned of all foreign matters, such as leaves, &c.; in gathering the olives must not be beaten, but picked by hand or with a hook made on purpose. The olives are spread in a hall, the floor of which is of glazed tiles and having a slope in order to allow the water which oozes out of the olives to run out. The olives are turned over several times, taking care not to allow them to ferment, as it would produce a rancid, inferior oil, and in this care lies the secret of success in obtaining a superior sweet oil. It is recommended when pressing the olives not to break the stone, as it contains a small almond which neutralizes the flavor of the first-class oil. In the second process in pressing the stones should be crushed in order to obtain the oil still left adherent to the stone and on the kernel or almond, which will be a secondary class of oil. Every utensil in the mill must be perfectly clean. It is essential that the entablature where the olives are pressed and ground, the baskets where the paste is placed for pressing, the receivers of the oil, &c., should not have been used in preparing rancid oils or of bad flavor. The virgin oil of first pressure must be extracted without the addition of the boiling water, which always alters its quality. With these cares a very superior first-class oil will be obtained from the first pressing.

On the second operation, the paste still contains a good deal of oil which the press by itself is not sufficient to extract, but with the assistance of boiling water, and a more efficacious pressure, an oil is obtained very good for kitchen purposes, and which unscrupulous merchants mix with cotton or other tasteless oils and sell in bottles as "*huile surperfine d'olive.*" After the second pressure, the mass of skin, stone, &c., is boiled and re-pressed with more force and through a peculiar process, obtaining an oil very much in demand for the manufacture of castile and other soaps. Thus three qualities of oil are obtained: the fine virgin oil for table use; the ordinary oil obtained with the boiling water and employed in the kitchen; and last, the gross oil of inferior quality used for industrial purposes.

The American inventive genius will produce not only superior mills and presses more active and economical than those now used in Europe, but also pulping machines to separate the pulp of the olive from the stone,

so soon as we have in the country forests of the truly surface gold mines, olive orchards.

"Are best results obtained on valley, hillside, or table land?"

Best results are obtained on gentle slopes and hillsides; good results may be obtained in table-lands, provided the soil is not adobe or compact, and having good drainage.

"What is the character of soil best adapted to olive trees?"

The olive tree will thrive in all soils excepting low, damp grounds. It will prosper and yield abundantly on the top and side of mountains, amongst rocks—matters not the shallowness of the soil—in gravelly and stony ground where neither wheat, barley, nor oats will grow.

On calcareous and volcanic grounds the olive produces the finest quality of oil; all those precipitous side hills and cañons, so numerous in some of the counties of California, all along the Coast Range eastward of San Diego, following up San Bernardino, Santa Barbara, Los Angeles, San Luis Obispo, San Juan, Contra Costa; all the sides of Mount Diablo, up north to the mountains siding the Klamath River, 42 degrees north latitude. North of this the olive will grow and flower, but will not mature the fruit, even if raised from seed.

The great value and importance of the olive tree is that it will thrive and prosper in soils where nothing else of value would grow. Those dry soils of arid aspect in many parts of California are the genuine lands for raising the most productive forests of olives, worth, in due time and at not distant period, millions of money. In Africa, in Greece, and in some parts of Spain, lands once abandoned for their sterility are now the source of wealth and revenue to communities and to the Government.

"Is there any system of artificial irrigation in use for olive culture?"

None. The olive trees require no irrigation. They are only watered when transplanted until secured.

"How near to the coast are the olive orchards?"

In some places at a distance of two or three hundred yards.

"What is the annual rainfall in inches in your district?"

Thirty inches is the average. The rainfall in the year 1881–'82 was 52 inches.

Pruning.—Of all the questions raised and argued with regard to the culture of the olive tree, none has been more debated than the pruning; not only every country has its ways of pruning, but every district has its manners and notions. On the other hand there are parts where the olive is never pruned.

The olive tree must undergo a certain amount of pruning, not to the extent of the orange; the old and bare wood must be removed; the branches must be kept in such a trim so as not to exclude altogether the sun and air from the head; suckers must be avoided and those only left required to fill a clear place of the head; the foliage of the head must be kept equally balanced. The olive produces flowers on the branches and wood of the preceding year. It is rarely necessary to cut large branches; some branches which have produced fruit for several years in succession and at last present an appearance of dryness about them, must be removed. By so doing, towards the end of winter it will soon produce new shoots, which on the following year will bring forth flowers. Olives must be thus pruned only every other two years. Following this practice from the beginning on young trees, the pruning will be but slight and easy to perform.

On pruning it is well to cover up at once the wounds on the tree with a mixture of earth and fresh cow's dung well mixed, which is just as

good for the purpose and more economical than the varnish used by grafters.

The branches, leaves, &c., from pruning, which in some countries are given to the cows and goats, are the proper manure for olive trees, and it should be buried while green around the trees, as well as all the oily waters and residue of the mills where the oil is made; these wastes are great fertilizers.

Besides the frosts and excessive cold, the olive has other enemies in the shape of insects, to combat which washes of vinegar or limewater and whitewashing the trees are necessary. It is highly beneficial to keep the trees clear of moss and parasite vegetation.

FIGS.

"Kind of fruits producing the figs of commerce."

There are various kinds of figs—white, red, and black—which are dried for commercial purposes. Of the white variety there is the White Burgasot, of excellent flavor both fresh as well as dry. It does not produce the early large fig, but only second season figs.

The Marseillaise or Athens fig.—Fruit very sweet and small, round in shape; it ripens in August, and is the variety most preferred for drying.

The Blanquette fig.—A middling variety, which resists cold weather better than any other varieties, and can prosper north of the regions of the olive; is also of second season, and is preferred while ripe before drying.

Of the red varieties the best for drying are the following: The *Date fig*, the most preferred for drying purposes; it ripens in August. The *Jerusalem fig* matures in September, very fine and large. The *Rose Blanche*, very large, and is only used for drying. *Sultana* or *Tunisian*, a large, choice variety similar to the Smyrna.

There are numerous varieties of black figs, bearing a different name in the various countries where they are grown.

Suffren has given a description and figure of three hundred and sixty varieties of figs cultivated in Spain, France, and Italy. Most of the fig trees yield two crops during the year: the first, producing the large fig, matures in June, and the second in August, September, and October. The fig tree grows on any soil, provided it is free of stagnant water retained on the surface over the roots. It prefers a light loam of a calcareous nature; should this retain its moisture the trees would grow taller; in dry soils the fruit is smaller.

The fig is propagated from seed, shoots, suckers, slips, stakes, layers, and by grafting. From seed is only practiced by some to discover new varieties. In raising from slips or stakes, these should be chosen from vigorous branches of the shoots of the previous year, and about 26 inches in length. The proper time is either in February or November. A hole is opened about 2½ feet deep; good manure and a little lime should be well mixed with the soil which is dug out of the hole. The slip or branch is then laid horizontally, leaving out the last eye perpendicularly, which on shooting out will form the tree. Budding or grafting is very seldom practiced in fig trees. The distance between trees should be 16 feet; during the heat of summer of the first two years the young plants should be watered.

Manuring the trees will greatly increase their crops. They require no pruning, only removing dry branches and new shoots from the trunk. When the tree obtains age it requires no cultivation. It is well to cover with straw the branches of the trees while from one to three years old

n the winter in cold climates to protect the eyes from frost, after which he trees becomes hardier as advancing in age. There are male and emale trees; the male is the wild or goat fig.

There should be amongst the fig orchards some of the masculine species, as those trees producing the small variety of fig and which yield so abundantly, require the proximity of the male sort to come to full naturity and size, otherwise the fruit drops before coming to maturity. In the absence of male trees in an orchard where these varieties are growing, the male figs, which are very small and unfit to eat, are brought and hung to the branches of the feminines. The wild fig produces a multitude of small insects of the genus *Cynips*, which settling on the fruits of the cultivated trees convey the pollen with which they are infected. This is a practice from time immemorial.

Morocco produces a large variety of most delicious figs; they are called by the Arabs "Kermuse" in general, although each variety has its name. There are figs of various colors, some of which are white, yellow, black, purple, and others green. The Jews extract "aguardiente," an ardent spirit, from figs. In Spain they prepare a savory wine from which they extract spirits which they flavor and term "anisette."

The fig trees commence to yield fruit when they are three years old, and come into full bearing when they are twenty years of age. From one hectare of land the yield generally is about 4,000 kilograms of dry figs, at value of $5 per 100 kilograms; total, $200.

As an example of the great yield of the fig tree, I may cite some trees at San Pedro del Pinatar, Spain, which produced each as much as $12 of early figs, besides 150 pounds of dried sold for $3, and 7 quintals of second-size figs sold for $9.50, which make the yield of each of these trees in full bearing annually to the amount of $20.50.

Curing the fig.—The fruit must be gathered when quite ripe, when they commence to dry on the tree, on a clear sunny day, after the dew has dissipated; they are exposed to the sun in lattice work made of canes or slips of boards, or in rough straw mats placed from the ground, allowing, if possible, the air to circulate under; the figs after a few days are pressed one by one into shape, to facilitate their curing; after sunset the fruit is removed to a dry and well-ventilated place for the night. This operation is followed until the figs are perfectly cured. When they are selected, the various sizes are spread on sheets for a few days in a ventilated place, the windows of which must be closed when the atmosphere is damp; and lastly the figs are pressed downwards on a table to give them a round shape; then they are packed in boxes lined with paper. The boxes must be kept in a dry and ventilated room. The common figs are packed and pressed in mats.

FELIX A. MATHEWS,
Consul.

UNITED STATES CONSULATE,
Tangier, April 2, 1884.

CULTIVATION OF THE GRAPE VINE.

REPORT BY CONSUL MATHEWS, OF TANGIER.

The grape vine is truly a cosmopolitan plant; is a gross feeder; it will flourish in the richest soil as well as in the poorest, on hills and in valleys, and amongst rocks; in fact it will grow and its roots will find their way in the smallest crevices of rocks where no other plant will

grow; the vine will stand repeated droughts as well as the most severe winters. The preferable soil is that which contains alkali and lime. Manure will increase the yield of fruit and assist in resisting diseases and insects.

The vine will live in, but is impatient of, continued or stagnant wet soil.

The vine raised from cuttings is capable of producing a given quantity of wood and fruit to perfection, and if allowed to exceed that proportionate quantity, a small, unripe fruit, and rusting, shriveling, or other evils will be certain consequences.

When a little less proportion of wood and fruit than the vine can mature is left on it, no evil can be derived, but certain advantages.

The vine bears on shoots of the present year out of the wood of last year; hence the practice of leaving a sufficient quantity of last year's wood.

There are numerous ways of pruning vines—every country, in fact every province, has its favorite way; but always bearing in mind that so long as a proper quantity of last year's wood be preserved, and not too much be left to push fruit and wood, a vine will bear, the actual style of pruning and training may be suited to the place in which it has to grow. In Jerez and other places they cut the first roots near the surface of the soil, to allow the lower roots all the force to penetrate deeper in the soil; in other places they condemn this practice. Still, the Jerez vineyards, treated as stated, leave nothing to be desired.

The length of barren stem before the branches are allowed to start is immaterial; therefore a vine with its bearing wood 30 feet high on the roof of a house and a bare stem all up the front will give as much and as fine fruit as a fellow-vine with its bearing wood within a foot of the ground.

The vine is propagated from cuttings, by grafting, by layering, from eyes, and by seed.

The vines propagated from cuttings, grafting, layering, and from eyes, being the direct issue of wood centuries old without intermixture, are sooner or later liable to run out by impoverishment and produce numerous diseases and evils, and lastly the phylloxera, although it is said that a well-manured and well-kept vine will not be troubled by the latter pest.

Propagation from seed is the most natural, and more important and certain of success than all others. It is from seeds that the innumerable varieties are obtained. A vineyard reared from seed will not be troubled by the phylloxera, even if the surrounding vineyards are all infested with the pest. The strong phosphor and youth in the vine raised from seeds will not permit the phylloxera to live; whereas the exhausted vine raised from cuttings, the origin of which is perhaps centuries old, and which have lost those peculiar defensive fluids of phosphor and potash, will breed the phylloxera, in the same manner as parasites and other miseries are created on old, wasted, careless men or poor naimals.

Propagation from seed is a very simple operation. Obtain seeds from all the finest varieties of grapes and raisins; sow the seeds in compost of loam, sandy soil, and dung manure, equal quantities, in the month of January or February if in Upper California, or in November or December in Lower California. They will grow rapidly, and as soon as they can be handled well plant out the desired distance 5 or 6 feet each way, and water well with manure water, and they will make a good growth the first season. They should be fastened as they advance to prevent the wind from

breaking them, and they may be then treated and trained like plants from cuttings or eyes as soon as they are large enough. On the sixth year they will bear fruit, which will improve in size and quality as they advance in age. On the seventh year the selection is made, leaving the finest varieties, and grafting those varieties which may not be found acceptable; they can be grafted from the others or from any other old plants, as the young roots will stand the attacks of all pests. When no selection of new varieties is desired, seedlings can be grafted when two years old of cuttings imported from foreign countries of the finest, choicest varieties when planted, the results are uncertain according to the nature of the new soil when they are set, while choice seeds on new soil are certain of producing some of the most excellent varieties, particularly if the young plants are encouraged by attentive cultivation.

Manures.—Return to the vine all that which it has given with the exception of the wine. Here is the great reform, of easy execution and fecund results. The lees and drosses of the wine-press and of the casks where the wines have fermented, the skins of the grapes, the ashes of the cuttings, and the residue of the distillery after evaporation has taken place until dry in the open air—these are the most precious manures for the vine, owing to their richness in alkaline salts.

Phylloxeric Congress.—The members of the International Phylloxeric Congress, which had its session at Bordeaux, affirmed that they obtained satisfactory results in their vineyards by submersion.

The submersion, according to their opinion, gives luxuriance to the wines, because water supplies phosphor and potash, both of which elements are indispensable to those plants, and of which elements much is used up in the shoots, leaves, and fruits yielded annually, and submersion restitutes them in the proportion which is mixed with water.

The submersion should be made by leaving the water standing in the vineyard, as in this manner the phylloxera dies quicker by drowning for want of air, because if the submersion is made through running water, the current of which carries air with it, the insect is not destroyed.

Phylloxera takes a longer time to die by submersion in winter, on account of the slower evaporation of the water.

Finally, submersion will always give good results if it brings to the vine the necessary quantity of potash and phosphoric acid.

These are the conclusions arrived at in the discussion sustained by the vine-growers, who agreed on this point with scientific men, each side of which brought forward their arguments.

FELIX A. MATHEWS,
Consul.

UNITED STATES CONSULATE,
Tangier, April 2, 1884.

CULTIVATION OF THE ALMOND.

REPORT BY CONSUL MATHEWS, OF TANGIER.

The almond is a tree of third magnitude, and is remarkable for the facility in raising it, for its hardiness in standing continued droughts, growing in the poorest soils, in the sands, gravels, and amongst rocks; and finally for the abundance of and high price which its fruit commands. In fact, the almond tree being the easiest and cheapest to rear and cultivate is the most useful tree to industry, medicine, and the arts.

California abounds in soils which are considered, owing to their locality, lightness, or hilly nature, unprofitable or unfit for any use but pasturing cattle in certain seasons of the year, which, if planted with almonds, would become sources of great wealth and utility. The culture of almonds is in fact the easiest, most economical, and productive. At their sixth year the almond trees commence to yield by far greater product than the expenses incurred in their raising and cultivation, owing to their rustic habit requiring no care from the time of their planting to the long period which these trees live.

The many varieties of almonds are variously described; they are divided in two groups, the sweet and the bitter almond. The most prominent are the Princess almond, the largest and most superior of all; others, large, soft shell, and large, sweet almond, very much sought; the common almond, with a small fruit; sweet almond, with a tender shell; Jordan almond, with a tender shell and a large, sweet kernel. These almonds are largely exported. The Sultana almond, or Ibiza of the Balearic Islands, with a small fruit and tender kernel; the Pistachio almond, with smaller fruit than the last mentioned, and a variety of hard-shell and bitter almonds.

Propagation.—The only and usual mode of propagating the almond is from seed. The soil preferred by almonds is a light sandy soil; excessive or even great richness is to be avoided, as in this the trees will produce large and luxuriant branches and foliage, but no fruit. The hardiest almond is the bitter, and is preferable as stock for budding or grafting on a given variety. The next hardiest for stocks is the sweet, hard-shell almond. The land selected should be plowed or worked with hoes immediately after the first rains. In the month of November or December small holes are dug, as if for sowing water-melons, and distance twenty feet each way. Procure the nuts of the last season and those which have not been much exposed to the air. In procuring almonds for seed the best quality of *soft-shell* almond must be used; then they will grow as standards, requiring no budding nor grafting, producing fine almonds even if some issue the hard-shell variety. Plant an almond in each hole from one and a half to two inches deep, but not deeper; sow them with the sharp point upwards, without breaking their shells. They will come up in about thirty-five to forty days. The first year they should be protected against frost and snow with sticks and straw around them, for, hardy as they may be when once established, they would be in some danger while young. They must be kept clear of weeds, and in the spring the surface of the soil should be stirred. On the second year trim off the lower shoots and head down those in exposed positions or intended for dwarfs. The buds that are pushing on the main stem should be rubbed off; branches, where they are wanted, should be encouraged, and the buds, where shoots are not wanted, rubbed off. It is far better to prevent the waste of strength in wood that has to be pruned off; then the almond will require no pruning, but an annual removal of dry branches.

In order to provide and replace with plants those holes where the seed has failed to come up, there should be a number of almonds sown in some selected place near at hand; sow them as you would walnuts, or rather plant them at regular distances eight inches or a foot apart every way, and two inches deep; in the spring they may be transplanted to their definite places, and well watered.

The best fertilizers of the almond trees are grass, weeds, leaves, &c., buried around them. Almonds are grafted or budded on plum stocks when it is desired to retard their bloom, but it is considered more certain, in order to avoid the only defect of the almond tree, precocity, to

plant the trees in sites exposed to the north winds, in cold places, in order to retard flowering as much as possible and escape the spring frosts.

The almond tree comes into full bearing in the eighth or tenth year, according to soil and climate. The fruit is gathered when quite ripe and allowed to dry before it is cleaned and packed.

The annual product of the almond varies according to the age or situation of the plant; a twelve-year-old tree may produce from eight to sixteen pounds of unshelled almonds—the average yield is twelve pounds—which sell readily at ten cents per pound in France, Italy, Spain, and even Morocco, the above being the lowest wholesale price; and should the trees stand twenty feet apart, at the rate of a hundred trees to the acre, the yield per acre will be 1,200 pounds, of the value of $120 per acre. If we take into consideration that the culture of almonds in a favorable climate is carried on on lands which are often useless for other crops, and the expenses of cultivation very small, often absolutely nil, it will be seen that it is a most profitable culture.

FELIX A. MATHEWS,
Consul.

UNITED STATES CONSULATE,
Tangier, April 2, 1884.

PRODUCTION OF FRUIT IN MADEIRA.

Consul Hutchison reports that raisins, oranges, lemons, olives, and figs are not specially cultivated in the island. The grape is cultivated for home consumption only. Of oranges, lemons, and figs, some are grown, but without any care being taken of them, and for home consumption only. No olives are grown in the island.

PRODUCTION OF FRUIT IN THE CANARY ISLANDS.

Raisins, oranges, lemons, olives, and figs are not cultivated in the Canaries on a scale which permits me to give a report. No organized orchards exist, and the small quantity of each kind of fruit gathered is scarcely sufficient for home consumption, private gardens being the only source of production.—(Report by Commercial Agent M'Kay).

APPENDIX.

ORANGE CULTURE IN JAMAICA.

REPORT BY CONSUL HOSKINSON, OF KINGSTON.

Referring to my dispatch dated January 28, 1884, I have now the honor to forward the press-copy sheets of a lecture delivered at the Town Hall of this city, last evening, by Dr. Neish, on the cultivation of the orange in Jamaica, which it is hoped may be of interest to the Department.

GEO. E. HOSKINSON,
Consul.

UNITED STATES CONSULATE,
Kingston, March 19, 1884.

DR. NEISH'S LECTURE ON THE CULTIVATION OF ORANGES IN JAMAICA.

SYLLABUS.

I.—Introduction; historical sketch; natural history; botanical characters; oil secreting properties of leaf, flower, and fruit; the purposes served by these oils; the orange tree an abundant bearer; properties of the fruit; its special value as a food; longevity of the orange tree.

II.—The sweet orange as grown in Jamaica; the most favorable localities; a competitive exhibition of orange fruits suggested to determine the best native sorts; varieties grown in the Azores; other varieties.

III.—Propagation; layering by elevation and other modes; planting; value of the limestone soils; distances apart; catch crops; manuring; teachings of vegetable physiology and agricultural chemistry; analysis of the orange fruit; computation of mineral elements withdrawn by the crop; pruning and cultivating.

IV.—Picking and packing; Sicilian and other modes; profits and markets.

V.—Our competitors; considerations affecting Florida; conclusion.

Analysis of the ash of the orange tree, by Messrs. Rowney and Blow.

Constituents.	Root.	Stem.	Leaves.	Fruit.	Pips.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Ash	4.48	2.74	13.7	3.94	2.3
Potash	15.4	11.7	16.5	36.4	40.3
Soda	4.5	3.0	1.7	11.4	0.9
Lime	49.9	55.6	56.4	24.5	12.0
Magnesia	6.9	6.3	5.7	8.0	8.7
Ferric oxide	1.0	0.6	0.5	0.5	0.8
Sulphuric acid	5.8	4.6	4.4	3.7	5.1
Silicic acid	11.7	1.2	4.8	0.4	1.1
Phosphoric acid	3.5	17.1	3.3	11.1	21.2
Chloride of sodium	1.2	0.2	6.6	3.9	6.8

Analysis of the ash of the orange fruit, by Mr. Richardson.

	Per cent.
Potash	38.7
Soda	7.6
Lime	23.0
Magnesia	6.5
Sulphuric acid	2.9
Silicic acid	5.2
Phosphoric acid	14.1
Phosphate of iron	1.7

With traces of chloride of sodium.

ON THE CULTIVATION OF THE ORANGE IN JAMAICA.

I trust it will not be without interest if, in the course of the lecture to-night, I pass in review before you some of the leading facts bearing upon the cultivation of the orange in this island. The governors of the institute, in doing me the honor of asking me to deliver a lecture, left the subject entirely to my own selection, and I have chosen that of the culture of the orange on account of its intrinsic importance as an industry in Jamaica, and with the hope that by the diffusion of information in relation thereto, one of the objects within the scope of the Institute of Jamaica may in some degree be attained.

My own experience in regard to the practical cultivation of the orange has been short and interrupted, and it would therefore become me to speak with modesty and reserve. My excuse, indeed, for venturing upon the subject at all, must be that others who could lay claim to more experience than myself have not yet come forward to press this economically important subject on the attention of the public. In the mean time, however, it is known that a want is felt, and that there is a considerable amount of information waiting to be diffused amongst our people.

Premising thus far, let me ask you, if you would realize the native home of the orange tree, to consult a map of India. The southern slopes of the great Himalayan mountain range, extending eastward from the Sikh country, lying to the north of Delhi to Sikkim, due north of Calcutta—a region watered by the northern tributaries of the Ganges—constitutes the original habitat of the orange. This conclusion is drawn from botanical considerations and from traditional or historical accounts. Botanists have ascertained that this region is the home of wild varieties of the orange family which has served as types from which the cultivated varieties have sprung, and that many other plants included in the Natural Order Aurantiaceæ (to which the orange belongs) are also indigenous to the region. For example, the Cookia and the Bael fruit, both belonging to the orange tribe, are indigenous to this region. It has has a tropical climate, tempered by elevation. The wild citron of Northern India is believed to have been the source of our cultivated varieties of the orange.

The orange tree made its appearance in Europe in the fourth century, but it was not widely diffused until the fourteenth century. According to Gallerio, oranges were brought by the Arabs from India by two routes—the sweet ones through Persia to Syria, and thence to the shores of Italy and the south of France, and the bitter, called in commerce Seville oranges, by way of Arabia, Egypt, and the north of Africa, to Spain. Thus all the old orange groves at Seville and Cordova, planted by the Moors, were of the bitter-fruited variety; and to this day the bitter orange predominates in the south of Spain. The discovery of the New World took place at the end of the fifteenth century, at which date the bitter orange had been completely disseminated in Southern Europe; and the Spaniards (who had become possessed of the Andalusian orange groves on the expulsion of the Moors) brought the orange trees with them to Jamaica and the other West India islands in the course of their colonization.

The early geographical enterprise of the Portuguese in rounding the Cape of Good Hope and exploring the coasts of India and China, resulted in the acquisition of the Indo-Chinese sweet orange. The first sweet orange grown in Western Europe is stated to have been reared at Lisbon, and became commonly known as the Portugal or Lisbon orange. The Portuguese in like manner to the Spaniards disseminated the sweet orange in their colonial possessions, in the Canaries, the Azores, and Brazil. It is, perhaps, quite safely conjectured that the Portuguese settlers, who came to Jamaica under the protection of the House of Braganza, brought with them the sweet orange from their own country.

When the English landed in this island they found here the sweet and bitter orange and the lime. The citron and shaddock are of more recent introduction; and at the present time nearly all the useful kinds of the orange family are either widely disseminated or to be found as growing specimens in our botanical gardens. The *Ægle mar-*

melos, or Bael fruit, is yet scarce; the Japanese orange, or Kumquat, is almost unknown, and some kinds of lemon and lime, notably the bergamot lime, are still wanting.

The earliest orange trade that we know of from history was the exportation of the orange fruit from Syria to Rome—a trade which is known to have been carried on as early as the commencement of the Christian era and to have continued for more than four hundred years. The Syrians, it may be remarked, are noted cultivators of the orange to this day. They practice irrigation most attentively; and although imperial Rome no longer affords them a market, yet they profitably dispose of their oranges in Southern Russia and along the coasts of the Black Sea.

The orange tree has characters so conspicuous and distinctive that it serves as the type of a number of genera or kinds which have been included by botanists in the natural order Aurantiaceæ—a term derived from the Latin *aurantium*, an orange. The position of this order in the natural history of the vegetable kingdom may be said to be between the gamboge tree on the one hand and the tea tree on the other.

I do not wish to trouble you with botanical details or technicalities, but it is important to consider a few of the characteristics of the orange family. They are evergreen trees or shrubs, remarkable as such for their beauty, their fragrance, and their fruit.

First, then, as to the leaves. A very slight examination of the leaf of an orange discloses a difference in structure from the leaves of other trees. Just at the point where the leaf-stalk joins the blade of the leaf, there is a transverse line or marking; this cross-line denotes the situation of a joint. The leaf, then, is articulated to its stalk; and the stalk, moreover, has on two sides small leaf-like expansions, the stalk being *winged*, as it is termed. Holding up the leaf to the light, it is found to be covered with a great number of minute transparent dots, which mark the situation of oil-secreting glands, which oil is the source of the strong perfume of the leaf.

I will not describe the structure of the beautiful white, waxy flower further than to remark that its five petals are rather thick; they, too, like the leaves, when held up to the light, appear full of pellucid dots, which are receptacles of secretion filled with fragrant oil.

The fruit is solid and globular, as in the orange; ovoid, as in the lemon. The term "hesperidium" has been given by botanists to this kind of fruit, a name which suggests the celebrated myth of the early Greeks, the rich yellow fruit of the orange recalling to mind and typifying the golden apples of the Hesperides. A hesperidium is a solid fruit, having a spongy separable rind, containing a cellular pulp, and divided by partitions or dissepiments into a number of segments.

The seeds are variable in number, and sometimes a single seed may contain more than one embryo, a fact which explains what is occasionally noticed of two or more plants springing up from one seed.

Of these characters, the leaves being articulated and dotted, with winged stalks, are enough to mark the order Aurantiaceæ, and the hesperidium in conjunction is sufficient to determine the order. It is an order containing more than twenty genera, but of these the genus *Citrus* is chief, as it contains all the varieties of orange and lemon fruit in cultivation.

We have seen that the green leaf secretes a fragrant oil, and the flower also, whilst the rind of the fruit contains oil glands of a yet larger size, which secrete a pungent fragrant oil in comparatively large quantity. The oil glands of the rind are sufficiently conspicuous to be made out by the naked eye on a vertical or transverse section of the rind. In the orange and lemon, indeed, these glands form prominences on the surface of the rind, but in the lime and shaddock they are imbedded beneath the smooth skin. The whole plant, then—its leaves, its flowers, its fruit—is redolent of essential oil; and the question may naturally be put, What is the purpose served in the economy of the plant by this all-pervading volatile oil? The answer is that it is one of those wonderful adaptations of nature which are designed to accomplish a most important end. We may interpret the efforts of nature aright by judging of the cause, the effect, and the object. Now, the great object of the orange plant is the perpetuation of its species. Like most other plants, it is constantly struggling for its existence and making warfare against its enemies, to the end that it may perpetuate its kind. This law of nature is a most bountiful one, considered in its relation to man, and with respect to an edible fruit like the orange, because it tends to an abundant supply of what is really a most grateful article of human food.

Besides its stout and formidable thorns, then, which serve as weapons pointed against every intruder, the orange tree maintains its warfare against minute insect enemies by means of its pungent oil. It is the habit of growth of the plant to form its flowers on young and tender shoots, and these shoots, growing with the advance of the season, in time become the stalks of the rich pendant fruit. While young and tender, the shoots and leaves would be much more vulnerable to the attacks of predaceous insects were it not that the oil of the leaves is obnoxious to them. Now, the protection thus afforded to the young leaves not only insures a safe growth to what are the lungs and elaborating organs of the tree, but it is of direct and immediate service as a protec-

tion to its reproductive organs, the flowers. Again, no sooner have the flowers attained perfection than they exhale those delicious odors—odors highly prized by the perfumer, and available for gratifying the artificial wants of man. But the natural uses of these choice perfumes are immeasurably more valuable than their artificial employment. When an orange tree is in bloom these delicious perfumes fill the air, and attract swarms of bees, which fertilize the flowers and insure the production of fruits and seeds. It is a singular, yet a most admirable, provision that the oil, which, in its vaporous state, attracts bees (which are the true friends of plants), should, whilst concentrated in the formative cell, be antagonistic to ants, which are the most industrious enemies of plants and flowers. In this way the teachings of nature suggest to the grower that he should keep bees in his orange groves with the primary object of securing abundant crops, and the secondary one of providing a little honey. It is worthy of remark also that the honey fabricated by bees during the blooming of orange trees is of the highest possible quality.

Let us now consider the uses of the oil of the rind with respect to the fruit. It has latterly become known that all, or almost all, the essential oils of plants, such as thyme, lavender, peppermint, and many others, are most powerful disinfectants. They are resisters of decay; and in the orange the object of its oil is to preserve the rind against attack and decomposition. And most admirably does it perform this duty. It is well known to those who are familiar with the orange tree as it grows in this island that the fruit may be preserved for a considerable length of time by simply allowing it to remain on the tree. That is, as long as the oil glands are uninjured by touch the fruit may be preserved intact, proof alike against insect enemies and internal decay. Let the fruit, however, be rudely plucked, or injured by bruising, and it will be noticed that decay sets in and insect enemies make an inroad upon the sugary interior, just at the very point where the oils cells were ruptured and their contents dissipated. This fact, too, has its lesson for the grower, the packer, and exporter, but its further consideration had better be deferred until we have done with the facts drawn from natural history.

The rind is observed to thicken towards the close of the season, and a hot situation is believed to be conducive to the thickening of the rind. The fruits of a young orange tree have more seeds than the fruit of a tree in full bearing, and as the soil becomes exhausted the seeds are observed to diminish. Aged trees are also observed to give fruits with the thinnest rinds and the smallest number of seeds.

The orange is remarkable amongst fruit trees on account of being exceedingly prolific. As an abundant bearer it far surpasses the fruit trees of temperate climates. Trees in the Azores of great age and large size have been known to yield annually 20,000 oranges. In Southern Europe there are trees which are known to yield 5,000 fruits in a season. Tangerine oranges, planted in New South Wales, when only a few years in bearing have yielded upwards of 4,000 fruits. In the West Indies a tree at ten years old may be expected to yield 300 oranges; at fifteen years, 500 oranges; at twenty years, 2,000; and at thirty years (when it is in full bearing) it may give a crop of 3,000, or even more under favorable conditions of soil and culture. From what has been explained with respect to the structural peculiarities of the plant, and the natural provisions which it possesses that arm it against foes and assist it to preserve its footing in the struggle for existence, it will not be surprising that the orange tree should be so productive, nor will it be difficult to account for the fact. It would seem, indeed, that nature has especially fitted it to give a bounteous yield in suitable soils and climates.

No one requires to be told of the delicious flavor of a ripe, sweet orange, nor of the keen relish with which the fruit is eaten, both in the countries of its production and in those to which it is exported. And yet it is just here that science can step in and account for this fact in a way to prove that the average fruit is no mere luxury, but that it contains in its composition some most important elements of human food. This being the case, its popularity as a fruit is based on the sure foundation of utility; because in consuming it we gratify the innate cravings of our nature for fruit of just such qualities. In the orange fruit mineral alkalies and organic acids are blended with sugar and organic fruit principle. But the fruit contains besides quite an appreciable quantity of phosphoric acid, and a small proportion of phosphate of iron, which latter substance is well known as a medicinal tonic. Phosphoric acid in combination is a most important proximate principle of nutrition. It forms a part of the structure of the human body. We require it for the nourishment of our system, and, therefore, we seek for it in the food which yields it up to our digestive apparatus. It is phosphoric acid which helps, with starch and gluten, to make wheaten bread the staff of life, which helps to make yam a substantial article of diet, which gives a quality to animal food; and it is phosphoric acid also which gives a zest to the orange fruit, and makes it both exhilarating and refreshing. The organic acid is the citric acid, which is neutralized by the potash forming citrate of potash, which is well known as a refrigerant medicine. The acid also serves to render soluble the phosphate of lime, which is a bone food, also a brain and nerve food, in short, a restorative. The

phosphate of iron present makes it a tonic, and the tonic properties are increased by a slight bitterness when present, as it is in certain varieties. As a fruit refrigerant it is most gratefully cooling in a hot climate. The abundance of potash makes it an antiscorbutic and ablood purifier. The sugar and nitrogenous elements present in the pulp are directly nutritious. Need I remark, after this enumeration of its qualities, that the orange well deserves its place on the dessert table?

Not only does the orange tree yield an abundance of fruit of a very special and valuable quality, but as if further to add to its value amongst fruit trees, it is endowed with great vitality, and lives to an extreme old age. There is an orange tree in the convent of Santa Sabina, at Rome, which is known to be 684 years old. The orange groves planted by the Moors at Cordova, in Spain, still exist—objects of great beauty and of much interest to travelers. In the old Moorish palace of Alcazua there is an orange tree known to be upwards of 600 years old. The famous old tree has attained large dimensions, and possesses a massive trunk, split and riven with age. Still another instance of the longevity of the orange tree may be mentioned of historical interest, and remarkable as having occurred under artificial conditions. I refer to the bitter-orange tree, familiarly known in France as the Great Constable or Grand Bourbon, which is known to be 463 years old. It is growing in the orangery at Versailles, with its roots in a large box, and has a stem 10 inches in diameter. It was planted in 1421 by the gardener of the Queen of Navarre, and came from Chantilly. In 1532 Francis I, having confiscated all the property of the Constable of Bourbon, Lord of Chantilly, who had been driven into rebellion, had the precious tree, which was quite unique in France, transported to the orangery at Versailles, where, according to Figuier (whose account I have consulted), it still remains in a highly flourishing state.

In dealing with the varieties of the orange, it will be advisable to restrict the subject to a consideration of the more valuable varieties of the sweet orange suitable for cultivation either on trial or for market. To take up all the varieties of the genus *Citrus* on the present occasion would require much time. Moreover, the uses of the lemon, the lime, the bitter orange, the bergamot, the citron, &c., is an expansive subject, which would, of itself, require a separate opportunity for its proper discussion.

The sweet oranges grown in Jamaica have been, up to quite recent years, of no particular or named variety. They have been grown from seed; and it speaks much for the perfect suitability of the soil and climate in most parts of the island that such excellent fruit should have been produced under a plan which embodies none of the teachings of horticultural art—under a plan, in short, which is one of neglect or lucky chance left to take the place of intelligent guidance. The earliest cultivators of oranges in this island were the enslaved negroes, and the oldest trees yielding the largest crops are only to be found on those parts of estates which were set apart for the cottages and gardens of the slaves. I know of a small sugar estate on which, forty years after emancipation, the fruits of the orange trees planted by the old negroes around their dwellings, were sold to a contractor, without any expense of labor, for £40. This was almost at the commencement of our fruit trade, and the crop (more carefully handled now than then) is worth more than double the money. One common variety, then, is a mixture of seedlings, some of the fruit being really excellent, of large size, of good flavor, and of qualities which achieve for it a popularity in the American markets. Naturally, when the cultivators trust to seedling trees for their crops, the best fruit will be produced in the most highly favored localities. The orange tree requires a deep, rich soil, a warm climate, with plenty of sun to ripen and sweeten the fruit, and plenty of moisture to keep up its growth. These conditions of soil and climate obtain in the parish of Manchester, which is famous for its oranges, also in the cooler parts of Clarendon and St. Catherine, and in St. Ann's, from all of which parts the best oranges are exported.

I take the opportunity to throw out a suggestion, that as some of these seedling fruits are of a kind so good and so suitable for our trade that they are not likely to be surpassed by imported trees, steps should be taken to ascertain and name the best of our common kinds, so that they might be propagated true to name by budding and grafting and be generally distributed throughout the island. Work of the kind here suggested is done elsewhere by means of prizes offered by horticultural societies. In Jamaica it would be advantageous to bring about a competitive exhibition of orange fruits, with a special view to ascertain the best native kinds, so that they might be propagated largely and to the exclusion of inferior sorts. The possibility of thus being able to place on the market large quantities of fruit with a distinct name and of a definite quality would be of great advantage to the export trade.

The variety of sweet orange that is most extensively cultivated for the European market is undoubtedly the common St. Michael's orange. This is believed to be a true descendant of the Early Lisbon orange. It is undoubtedly an excellent variety, and is held in high favor by the Portuguese growers in the Azores on account of its great productiveness. The fruit is of somewhat small size, sweet-scented, of a rich golden

yellow color, and its seeds are almost round in their shape. Its thin rind is rather a disadvantage when it has to be sent a long distance to market, but with careful packing this defect can be remedied. Though yielding immense crops of very fine fruit, the tree is rather late in coming into bearing, and it is not until it is twenty years old that it gives its full returns.

In addition to the common variety of St. Michael's orange, there are other valuable kinds grown in the same island. One of these is the Comprida, remarkable for its aromatic flavor, and with a rather acid juice. The fruit is in good favor; but the tree is a shy bearer, and it is not perhaps desirable as a market kind. The Ombigo is a flattened orange, the tree is a heavy bearer, and from accounts seems to be an excellent market fruit. The finest of the St. Michael's kinds, however, is the Selecta, or choice orange, which is of large size, of excellent flavor, very sweet, with few seeds, and coming to maturity late, and so prolonging the fruit season up to the month of April. This kind has a high repute, and it would be well for our growers to give it a trial.

What is known as the Jaffa orange is the lineal descendant of the sweet oranges first grown by the Syrian cultivators and sent by them to the tables of the Roman emperors in the early days of the Christian era. It is highly esteemed throughout the Mediterranean coasts, and it and a subvariety, known as the Mediterranean Sweet, constitute the two leading kinds grown by cultivators in that part of the world.

Some excellent varieties of sweet orange, with local names, have been grown in Florida, varieties which are said to compare favorably with oranges imported into the United States from the Azores and the Mediterranean. These varieties have originated by careful cultivation and selection of the best, in the way that I have recommended for securing the best of our native Jamaican kinds.

Quite a distinct variety of the sweet orange is the Tangerine. In Paris this is known as the Mandarin orange, and it is there, as everywhere, a great favorite with the ladies. It is sometimes called the "Kid Glove orange," because you can break the skin and peel it without using a knife or staining the fingers. This variety was introduced into Jamaica at a very early date, and it is sometimes known as the Madeira orange. More recently, however, much superior sorts of the Tangerine orange have been distributed from the Botanic Gardens, and the fruit of these trees is now making its appearance in our local markets, where it sells at more than double the price of the common orange. It is a very desirable kind to cultivate, and growers should take it up and extend its cultivation, so that we might be able to export it on a large scale. As I have already remarked, I do not intend to take up in this lecture any other varieties of *Citrus* than the sweet orange; but I feel impelled to refer in passing to the shaddock—*Citrus decumana*. I am of opinion that one of the most profitable uses to which we can put the shaddocks growing in Jamaica would be to make them serve as stocks for the Tangerine orange. The grafting of the Tangerine orange upon the shaddock has a remarkable effect. It is attended by an increase in the size of the fruit and quantity of the crop, whilst the flavor is greatly improved. Plant shaddock seeds, then, with a view to raise stocks for the Tangerine, and where shaddock trees are growing in places where they could be turned to better account, cut them down to a few stumps and graft them with scions of the Tangerine variety.

Closely allied to the Tangerine is the Maltese Blood orange, which grows to perfection on the shores of the Mediterranean. The taste for this fruit has to be acquired.

Oranges are frequently noticed to have some irregularity of form, and indeed the order is very conspicuous for producing what botanists term monsters, of which the double oranges sometimes noticed may serve as an illustration. A monstrosity of this kind, occurring at Bahia, in Brazil, has given rise to a distinct variety known as the Navel orange, on account of a protuberance at the blossom end. The oranges first introduced into the Australian colonies were all obtained in Brazil, and amongst them the Bahia or Navel orange. It has become such a favorite with the Australian colonists, and is so uniformly spoken of in terms of high praise by travelers in Brazil, that there can be no question of the value of this variety. I am not aware of its existence in Jamaica, but it has latterly been introduced into Florida, where it has already fruited, and is there deemed an acquisition. It would not be difficult to obtain this kind from Florida.

We owe the large number of varieties to the tendency which the orange has to "sport," as gardeners term the tendency of seedlings to prove different from the parent plant. Whilst this tendency is of some advantage as affording the chance of improvement, it is a disadvantage in that it prevents the propagation of the tree by means of seed, for when seeds are sown the resulting tree is much more likely to be inferior to than it is to equal or surpass its parent. Hence the necessity for special means of propagation, as by cuttings, layering, budding, and grafting. The orange tree is not usually propagated by cuttings, but it can be done; nor by layers, and yet as a matter of fact a modification of the method of layering, known as layering by elevation, is practiced in the case of the orange. Almost everybody is familiar with the process of

laying down the shoot of a grape vine. The branch of the vine is simply laid in a shallow trench; it is pegged down in its place, or a stone is placed upon it to keep it down. The trench is then filled up with earth, which should be kept moist, when, in about three months, a copious supply of roots has been thrown out by the branch in the trench, and the shoot may be cut off from the parent vine and be planted in an independent position. Now, in the case of a high growing tree like the orange, we cannot bring the branch down to the ground, but we can carry up the soil to the branch. It is done in this way: A flower pot or box is made with a slit in its side, so as to receive a growing branch, which is first of all prepared by wounding or ringing the bark, so as to cause it the more readily to throw out roots. The flower pots or boxes are then filled with soil and secured in their places by cords or props. The earth in the pots is kept moist by frequent waterings, and the result is that in a short time roots are thrown out, after which the branch may be sawn off below the flower-pot, and it is ready to be planted out. This plan is now greatly resorted to by the Portuguese in the Azores; and I should like to read the following short extract from the account of their method by a visitor to the orange groves of the island of St. Michael. He says: "The trees are increased in a curious way. The mode of propagation was derived from the Chinese, and has been much in use of late years. A branch of the diameter of 4 or 5 inches is chosen, around which a circular incision is cut. Around this straw matting is wound in the shape of a funnel, and filled with beaten earth from the middle of May to the middle of June. Roots soon begin to push, and by the following winter it is provided with sufficient to support it when detached from the parent stem. The young plant thus obtained often bears fruit at the end of two or three years."

This mode of propagation has simplicity for its recommendation. By its means the possessor of any good kind of orange tree could soon establish a considerable number of the same kind, and without the exercise of any special skill. But it is a slow process of multiplication compared with budding and grafting, which, in fact, are the modes adopted by nurserymen. For these modes stocks are necessary. Stocks may be raised from seeds, or full-grown bitter-orange trees, or sweet orange trees of inferior kinds, may be cut down to stumps and a bud or graft inserted. For the theory on which budding and grafting depends, I must refer you to horticultural works, and also for the details. Let it suffice here to state that the process is by no means difficult, and may be acquired by any persevering grower simply by attending to the directions.

Thanks, however, to the agency of the botanical department, budded trees of good kinds can be procured for a nominal sum, and at a cost below the price charged elsewhere by nurserymen. Our cultivators would do well to procure their trees already budded from the gardens, as under present circumstances this will be found the most economical course. They should be planted out in a rich, deep soil, on sloping ground, if practicable, so that there should be natural drainage, which is a very important consideration, as the tree will not thrive in a stagnant soil. The soil of the limestone formation, which is so abundant in Jamaica as to constitute almost the entire area of several parishes, forms a most excellent soil wherever it is of sufficient depth, since it abounds naturally in the mineral constituents required by the orange tree; and, moreover, it is naturally drained.

This fruit tree requires plenty of room. Close planting, by shutting out the sun and air, proves a mistaken policy. It has been observed that in the countries where wild oranges form thickset forests, these trees bear very little fruit; but if a wild orange tree is found growing in an open space, it is then seen to yield fruit in abundance. It has also been shown with cultivated trees that close planting diminishes the yield. Orange trees should not be planted closer than 20 feet apart, at which distance there will be 108 trees to the acre. At 22 feet apart there will be 90 trees to the acre, and at 25 feet apart there will be 50. These are good medium distances which should be adopted in laying out a close plantation, grove, or orchard; but a wider distance, say 30 feet apart, may be adopted with trees that are known to attain a large size. For Tangerine oranges, which are of compact habit, the medium distances will be found best suited. Remembering the long life of the tree and the permanent nature of the plantation, no amount of pains can be deemed misspent in fully preparing the ground; large holes should be dug for the young trees, and manure should be added to insure a thrifty growth whilst the plant is young. The soil round about the young trees should be kept loose by frequent digging, but experience in Jamaica has shown that it is not always safe to adopt the plan of mulching. The dry grass, weeds, and trash used in mulching too often prove a harbor for worms and enemies which injure the young trees. In dry seasons, however, mulching is a great advantage, and with the caution already given it may be adopted.

In orange planting it is not likely that any profitable return will be obtained from the trees for eight or nine years; and it therefore becomes an important consideration to know whether the cultivation of the intervening soil in any other species of crop can be carried onto advantage. Some horticultural writers have condemned

system of catch crops, for the reason that they tend to exhaust the soil. This is undoubtedly the case; but if manure be supplied, any kind of catch crop may be grown. If manure is scarce, they had better not be resorted to. Indian corn and caster-oil seeds are objectionable as catch crops, because they take away from the soil that which the orange tree requires; but peas and beans and most garden vegetables are suitable. Coffee trees should never be grown in proximity to orange trees, for in that case both alike will suffer. This error in planting may, however, be frequently seen in various parts of the island. It should be known that the orange tree is a ravenous feeder, and will only succeed in soils that are naturally rich, or whose fertility is kept up by regular manuring.

To understand the subject of manuring it is necessary to get acquainted with certain teachings of vegetable physiology and agricultural chemistry. Vegetable physiology teaches us that plants from the earliest periods and through all their stages of active growth and maturity require for their sustenance certain mineral elements which are obtained from the soil, and that the demands upon the soil for these essential constituents are increased when the plant or tree is forming fruits and seeds. In plain terms, the taking away of a crop signifies the removal from the soil of an amount of fertilizing materials in exact correspondence to the proportions contained in the crop. Agricultural chemistry teaches us that even the most fertile soils contain certain essential elements of fertility only in small proportions, and that there is consequently a limit to the productiveness of every soil, even of the best. The elements of the soil that may be originally deficient, or which may be in course of abstraction by repeated cropping, require to be restored. If they are not restored, barrenness is the result; hence the resort to manuring; hence, also, the great importance of this part of the subject.

Let me now ask your attention to the tables of analyses of the mineral constituents of the various parts of the orange tree, which are submitted before you in the printed syllabus. The analysis by Messrs. Rowney and Blow is a most instructive one, as it deals with all the parts of the tree, viz, the root, stem, leaves, fruit, and seeds. The percentage portion of the ash is also given, which makes it available for practical computations as to the actual quantity taken away and the weight of materials which ought consequently to be returned. The analysis by Mr. Richardson is of the fruit only, and the percentage of ash is not stated by this chemist. But it may be assumed that the proportion of ash in the entire fruit is about four per cent., while, for manuring purposes, it will be safer to estimate it at five per cent. On this estimate, in every ton of crop of 2,000 pounds there will be removed from the soil 100 pounds of mineral matter, distributed, according to Mr. Richardson's analysis, amongst the several constituents as folows, viz: Potash, 39 pounds; soda, 8 pounds; lime, 23 pounds; magnesia, 6¼ pounds; sulphuric and silicic acids, in small proportions; but of phosphoric acid no less than 14$\frac{1}{10}$ pounds; and of phosphate of iron about 1¼ pounds. Essentially the same results may be deduced from the analysis by Messrs. Rowney and Blow; and, in passing, I would ask you to note particularly how that phosphoric acid in combination is there shown to exist in fairly large proportions in all parts of the tree. If phosphoric acid were a plentiful substance in soils naturally, there would be the less reason to dwell upon its importance as a constituent of the orange and other crops; but, unfortunately, it is not plentiful. In many soils it is very scarce, and in good soils it exists only in small proportion. It has been computed that one hundred pounds of good soil are not likely to contain more than half a pound of phosphoric acid. Very fortunately for the agricultural interest in Jamaica, this prime constituent of fertile soils is not deficient. Our limestone soils are of marine origin, and they contain phosphoric acid in appreciable quantity. If they did not, the island could not have gone on exporting coffee for more than a hundred years without having to import this element to replenish the soils of the coffee plantations. Nor could we hope to export oranges for any lengthened period were it not that the soil is originally rich in this element. It is at the same time quite true that our exportations are constantly diminishing the fertility of our soils, and the proposition is also true that the orange tree will not give an abundant and profitable crop except the soil be kept in a high condition of fertility. Wood ashes, burnt limestone, and bones, or some other form of phosphate of lime, are the manures required by our orange groves, and these, along with farmyard compost and forest leaves, should be liberally supplied.

It may be here remarked that nature seems to have dealt out her favors to the West India Islands with a bounteous hand. As if specially intending them to be sources of supply for tropical agricultural products for the northern temperate zone, these islands are possessed of excellent harbors adapted for steam navigation; and, as if with a view to prevent the exhaustion of their natural fertility, there are scattered throughout the archipelago numerous small islets and cays, some of them containing large supplies of phosphatic guano, and others consisting entirely of phosphatic rock. It is thus plainly indicated that we have at our very doors storehouses of that which will confer renewed fertility upon wornout fields. The outlook, therefore, for West Indian agriculture in this direction is not a blank, but rather a hopeful prospect.

To return to the orange tree and the question of pruning. The orange tree differs from coffee trees and most fruit trees in that very little skill or labor in pruning is required. As already stated, the fruit is formed on young shoots of the current year's growth, and consequently pruning this tree cannot exert the same influence as in pruning coffee, which requires ripened wood for bearing shoot. Fertility in the orange is promoted by manuring, and pruning may be simply restricted to cutting out dead wood and misdirected branches, or to giving a desirable shape to young trees. To stimulate a bearing tree to its utmost productiveness the following plan may be followed: Let a cord be passed loosely round the trunk of the tree, and, with the distance of the outermost branches from the stem for a radius, let a circle be marked on the ground round the entire circumference of the tree. A deep trench, fully a foot wide, should be dug along this line and be filled up with a mixture of bone, dust and well-rotted manure; finally, let the trench be covered by the loosened soil. The effect of this treatment will be to stimulate a growth of young rootlets, which will feed upon the enriched soil of the trench; the result of this will be that a strong growth of young shoots will everywhere take place amongst the branches; and, as a final consequence, the tree will be full of flowers and fruit. When the season's growth has taken place it will be found that the tree has gained in size to the outer dimensions of the trench.

Within the past few years great improvements have taken place in the modes of collecting and packing the fruit. At first, in the early history of our fruit trade, the oranges were rudely knocked down from the trees by means of long sticks, with no more care than a pen-keeper's cattle-man would take in knocking down a lot of bitter oranges as a feed for the pigs. They were carried loose in carts to the port, and at the port the oranges were shipped in bulk. With all this bruising and want of care, it is not surprising that cargoes on arrival at New York were found to be in such a damaged state as to be next to worthless in value. These early shipments indeed seem to have been good for no other effect than to teach the American consignees two things, one of which was the excellence of a Jamaica orange when it happened to reach New York in good condition, the other was the lamentable ignorance of our people of all that pertained to collecting and packing the fruit. American contractors next appeared upon the scene. These agents had been sent out to make purchases of growing crops, and to teach and superintend improved methods of packing. They brought with them hundreds of pairs of small, stout pruning shears, of no great monetary value, which they gave away to the laborers, whom they taught to cut off the orange fruits by the stem and to deposit them carefully in a basket. They also taught that the oranges should be carefully laid on shelves and floors for one or two days, then to examine them for signs of decay and to wrap up in paper and pack in barrels only those which were sound. These teachings, wherever they were intelligently followed, had a good effect. The extra value of Manchester "stem-cut" oranges in the New York market soon proved that care meant money, while carelessness signified loss. Our creole middlemen and contractors soon became more exacting as to the careful handling of the oranges they bought from the peasant proprietors, and the upward tendency of local prices has steadily gone on as a consequence. Seven or eight years ago the wholesale price of oranges in the interior towns was sixpence per hundred, and their value in New York was a thing not to be foretold from the prices current; for very often the shipment of such fruit entailed a heavy loss. Nowadays the price of a barrel of wrapped oranges is $3, and the price obtained in New York fluctuates between $5 and $7. Under the improved modes of packing the trade has steadily gone on increasing, until it is now an established and most important industry, representing, according to the latest returns, an export value of £37,567, obtained for 34,000,000 of oranges.

In Sicily the best oranges are wrapped as they are gathered from the tree; that is, the laborer first places in his left hand a sheet of soft paper, and, with the paper spread open, grasps the fruit, and then cuts it from the tree and completes the wrapping. In this way it is believed that the least possible injury is done to the fruit. But the Sicilians have a conviction that nothing is so injurious to the flavor of fine fruit as for it to be touched by a perspiring hand, and nothing short of bruising so likely to bring about speedy decay. Now, if this applies in Sicily, it will apply more strongly in Jamaica, or wherever negroes are employed in handling the fruit. The point, I think, is worth considering, whether such an improvement might not be adopted with profit in this island.

It has been proved by experiment that if an orange fruit be invested with a layer of plaster of paris it will keep for several weeks, and may safely travel a long distance. It would be troublesome and expensive, perhaps, to encase the oranges in plaster of paris, layer by layer, in boxes; but there is another plan which might be adopted, namely, to carefully wrap up a stem-cut orange in paper, and then to dip it in water so as to dampen the paper thoroughly; next let it be rolled in dry plaster of paris, when, if the coating is not found thick enough, a repetition of the proceeding might take place. In this way very little plaster would be expended, and the oranges could be packed in barrels in the usual way.

I think Jamaicans ought to be ambitious enough to aspire to compete for the trade of the English market; and, with a view to that object, they ought to consider the best possible means of packing, and to go on experimenting until they arrive at something like perfection. Let it not be thought that the expense for plaster would be deterring. We have abundant supplies of it in the island—one large deposit in the Yallaho district, close by—and these supplies would be at once available in case of a demand for the article.

With respect to the profits of orange culture little need be said. Undoubtedly the business is profitable, as may plainly be deduced from the rapid extension of the trade, from what is known of the extreme productiveness of the tree, and from the ease and simplicity of its culture in a climate so perfectly adapted as that of most parts of Jamaica. Where trees of good sorts already exist on a property the expenses of marketing the fruit constitute the only deduction; but such trees even may be made much more profitable by careful cultivation and manuring. Where bitter-orange trees or inferior sorts suitable for stocks are found growing in plenty, the quickest returns would be obtained by grafting such stocks with superior kinds, and forcing them into bearing by cultivation. They would then begin to yield a crop in three or four years. Where plantations have to be formed in the regular way the judicious cultivation of catch crops may be resorted to as a means of making the land yield an income during the period of waiting for the trees to come into bearing.

Computations, apparently extravagant, might be indulged in on the basis of large returns from trees, the number of trees to an acre, and the value of the fruit; but I do not propose to dazzle you with such a computation. I will merely state that one of the most encouraging signs of the times is the steady improvement in prices that has recently taken place.

Whoever examines the map of North America will intelligently perceive that Jamaica has the advantage of comparatively close contiguity to the North American continent. The West India Islands are the nearest tropical countries to the great markets for tropical produce in those regions of the United States which are most densely populated; that is, the Northern, the Eastern, and the Middle and Western States. This portion of the American Republic is wealthy, populous, and of vast consumptive power. Its capacity as a market is continually increasing, owing to the continuous increase of wealth and population. The region referred to is supplied by the ports of New York, Philadelphia, and Baltimore, to which ports lines of fruit steamers ply regularly.

To the north of the Republic is the Dominion of Canada, which presents a most hopeful field for the extension of our fruit trade. Canada has a population of four and a half millions, of whom three-fourths of a million live in cities and large towns. Its population, moreover, is rapidly increasing, both naturally and by immigration. In 1881 48,000 immigrants of the class of actual settlers entered the Dominion; in 1882 there were 112,458 actual settlers; and last year, 1883, the number of actual settlers was upwards of 120,000. Now, a country which is attracting to itself the wealth, enterprise, and population of Europe at this rate must needs become a great market for tropical produce; and Jamaica is one of the nearest sources of supply. Our sugar and coffee, which they purchase from us, is mostly shipped direct, but oranges and bananas reach the Canadian towns almost altogether from New York, between which port and the Canadian centers railway facilities are easy. In Nova Scotia and New Brunswick there are opportunities for the extension of a direct trade through the ports of Halifax and St. John.

It will thus be seen that we have large and ever-increasing markets at our own doors, so to speak, with every facility for keeping hold of our advantage in the increasing development of steam navigation. The steamers that have been specially constructed or adapted for the trade have every attention paid to their ventilation. One of the most recently adapted steamers may be said, indeed, to have her decks incumbered with ventilating funnels. It has been found in the fruit-carrying trade that to circulate a current of cool air throughout the various parts of the cargo space is one of the best means of preserving the cargo in good condition. In the conveyance of fresh meat across the Atlantic the same principle is carried out more perfectly and completely by circulating, by mechanical means, a constant current of fresh air, artificially cooled by means of ice. As improvements become more and more demanded, it is possible that the same arrangement may be applied to the fruit trade. Then the result will be that the area of our markets will be increased, and the shipping and distributing trade will be carried on with diminished loss, owing to the fruit arriving in better condition.

Such possible improvements point the way to the extension of the orange and banana trade to the English market. If, with improved means of packing, with the sailing routes of fast steamers changed so as to get out of tropical latitudes by following at first a direct northerly course and then crossing the Atlantic in a cooler climate than that usually followed by steamer sproceeding to England, and with ventilating and artificial cooling processes carefully attended to, it will then be possible to send

cargoes of oranges, mangoes, pineapples, and bananas to England in the best possible condition.

For the possession of our actual and possible future markets we have certain competitors. The principal of these is Florida; next comes Cuba, which ships oranges principally from the port of Havana. The island of Porto Rico is rather a formidable competitor. Mayaguez is the principal port of shipment, and the fruit is so fine that it fetches good prices in the American market. Of Jamaica oranges 400 are taken as the average number contained in a barrel, but of the oranges shipped from Porto Rico a barrel contains on the average 350. In other words, seven of such oranges are equal to eight of those sent from Jamaica. They are also said to keep well. The extra size denotes careful cultivation, and the better keeping qualities tell of care in picking and packing. The Bahama Islands usually send oranges to the American markets, but this year the growers have been unfortunate, as the crop is reported to have been entirely destroyed by a succession of heavy gales. The other West India islands must also be regarded as possible competitors, though up to the present they are not actively competing. British Honduras is also a competitor both in bananas and oranges, and the opening up of a direct line of railway between Mexico and the American frontier, which has just now occured, also suggests Mexico as a competitor, if not with Jamaica, at least with Florida. California is even a competitor, but the effect of her competition is simply to supply the markets on the Pacific coast, and even there California has to struggle against the shipment of oranges from Tahiti and other islands in the Pacific. At present the countries bordering the coasts of the Mediterranean are competitors more for the supply of lemons to the United States than of oranges. The Azores have their principal orange trade with England, and only a limited trade with the United States. In the Azores they have great difficulties of climate to contend against. Westerly gales, sweeping over the wide expanse of the Atlantic, are so violent as to be very destructive to the orange crop. To overcome the disadvantages expensive structures of high-walled inclosures of small area have to be resorted to in order to provide shelter. It need hardly be remarked that all such difficulties and expense are spared in Jamaica.

Let us, then, consider Florida as the chief competitor of Jamaica in our existing markets, and discuss the circumstances which affect orange-growing there and here. Florida has a climate which, considered generally, may be described as semi-tropical; and it would appear that many tropical productions can with attention be successfully cultivated in that State. Its configuration is that of a peninsula, running north and south, with the warm waters of the Gulf of Mexico on the western shore, and the waters of the Atlantic Ocean, warmed by the presence of the Gulf Stream, on the eastern coast. It has an almost uniform summer climate, being everywhere hot and moist from the frequent warm rains which fall during the summer months. Its winter climate, however, necessarily varies with the latitude, the northern portions being subject to frosty winters, and the middle portions, which are mostly selected for orange growing, being subject to occasional frosts that are very damaging to young orange trees and to the growing fruit on mature trees. A young orange tree is very susceptible to frost, but a fully-grown tree is hardier, and may outlive a frost sufficient to damage its ripening fruit. One of the principal rivers of Florida is the Saint John's, which rises in the southern portion of the State, and runs a northerly course almoft to the northern boundary. The Saint John's takes its rise in a hot region of dense swamps, known as the Everglades. Its waters are therefore of warm temperature; and the warm river current, as it flows through the middle and northern portions of the country, exercises a modifying influence on the winter climate of the lands situate near its banks. It is no doubt the peculiarity of this river influence on climate which has contributed more than anything else to make orange growing practicable and profitable in Florida; and the lands near the Saint John's are in much request for orange plantations. But even this favoring influence does not guarantee the certainty of freedom from damaging frosts; and winters occur from time to time when the genial influence of the river would seem to be either neutralized or suspended. In the winter of 1835 there was a frost so intense as to destroy all the orange trees down to the ground, and the dread of another such winter must always enter into the calculations and feasr of the orange-growers in Florida. The present extensive cultivation has almost altogether developed since the war, but, with the utmost care exercised in the selection of grounds, the cultivators have had to contend against repeated years of frost and damages to young trees and fruit. The winter of 1881–'82 was a severe one, and it would appear conclusively, that the region which is otherwise best suited for orange growing cannot be depended on on this account.

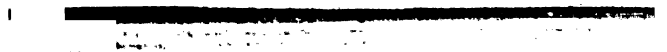
In point of fact the situation of Florida must be considered as the northern limit for the growth of the orange, and it is not surprising to find at the same time that orange trees there are subject to many and various diseases which they are exempt from in a more congenial climate. Mr. Parsons, the eminent nurseryman of Flushing near New York, speaking of the orange tree in Florida, says: "I can only say tha in a life-long familiarity with trees I have never known any so infested as the orang

tree." And then he gives a list of these enemies, as follows: "The small brown coccus, the large white coccus, or scale, the slug, the elephant grasshopper, the worm at the root, the ants just at the surface of the ground, the mildew on the leaf, the die-back, and the rust on the fruit." Truly a formidable list, and all the more conspicuous in Jamaica, where the orange tree is singularly free from disease. In Florida, no doubt, the greater susceptibility to disease is due also in part to the evil being mostly in low-lying situations, where drainage is necessarily defective.

But, notwithstanding these serious drawbacks, the orange-growers in Florida have several important advantages. They are nearer to market; they have the advantage of daily river boats and frequent ocean steamers; and they possess, besides, the advantage of railway communication. The most substantial advantage they have is good prices on the spot for their fruit. The average price is two cents apiece, and occasionally this value goes up to $25 per thousand.

In Florida the season of fruit is much shorter than in Jamaica. There the oranges begin to ripen late in November, and the season is over at the beginning of March. Here we can procure oranges almost all the year round, but the season begins nearly two months earlier than in Florida, and it lasts fully three weeks later. Herein, perhaps, consists an advantage scarcely appreciated in Jamaica. It follows, however, that in the earlier part of the season Jamaica might have a practical monopoly of the market. As the orange tree is so pliable under conditions imposed by art that, in a tropical climate, it can be made to give a crop at any desired time of the year, its blossoming may be hastened by cultivation and irrigation, and it may also be retarded by suppressing the blossoms as they appear. The retarding process can be effected by beating off the blossoms by means of a whip formed out of a cocoanut palm frond. This retarding process, I have been informed, is actually resorted to by the Spanish colonists in Nicaragua and Honduras.

I think a comparison like that which I have just instituted, and in which I have been careful to state with all fairness the condition of matters relating to the cultivation of the orange in Jamaica and elsewhere, furnishes material for satisfaction and encouragement; but at the same time it shows that we have active competitors abroad, and tells our people a lesson: that the subject of orange cultivation is one worthy of attentive study; that the conditions of success depend upon the practice of extreme care in the growing, picking, and packing of the fruit; and that, with intelligent care, the trade in oranges may be greatly expanded, and may be made still more profitable to the people of this island.



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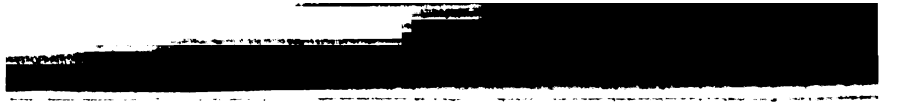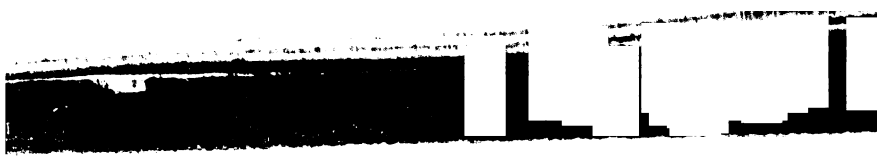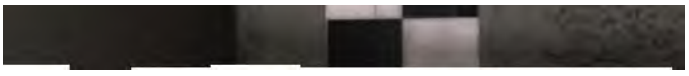
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